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ABSTRACT

Four articles contained in this bulletin focus on the geography of the Netherlands. The first article deals with the "Northern" Netherlands, i.e., the provinces of Groningen, Friesland, and Drenthe. Special attention is paid to the themes of the conflict between economic and environmental issues, the rich variety of landscapes and settlement forms, and the stagnating economic development in this region. The second article presents a selection of recent statistics about themes that arise frequently in the geography education of other countries. Statistics are given for the population and area, economically active population, exploitation of minerals and manufacturing industry, foreign trade, and tourism and holiday traffic. The third article focuses on the latest developments in matters such as traffic, water economy, and physical planning. Also included is a list of museums, information services, and other institutions of interest to geographers. The final article gives a brief review of the activities of the Information and Documentation Centre for the Geography of the Netherlands during the past year. The appendix lists a number of recent publications in the field of geography of the Netherlands. (LP)

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FOREWORD

The leading article in this eighth edition of the annual IDG Bulletin deals with the 'Northern' Netherlands, in other words, with the provinces of Groningen, Friesland and Drenthe. Special attention is paid to three themes: (i) the Wadden zone and the conflicts which arise there between the interests of economic development and nature conservation; (ii) the rich variety of landscape and settlement forms in the three provinces; and (iii) the stagnating economic development in this Dutch 'problem region'. The chapter ends with the description of an excursion route.

Chapter II presents, as usual, a selection of recent statistics, while attention is devoted briefly in Chapter III to the latest developments in such matters as traffic, the water economy and physical planning. This chapter again also includes the revised list of museums, information services and other institutions of interest to geographers.

Lastly, chapter IV gives a brief review of the activities of the IDG during the past year, while the appendices list a number of publications in the field of the geography of the Netherlands which have appeared in recent years.

The IDG wishes to thank the following people for their collaboration in the realisation of this Bulletin: J. Abrahamse (Section I.2.), C. van Welsenes (Section I.3.) and Prof. R. Tamsma (Section I.4.). We are also grateful for the regular collaboration of the Central Bureau of Statistics (CBS) in providing very recent data for chapter II.

This Bulletin is also published in Dutch, French, German and Spanish language versions.

Utrecht/The Hague,
Autumn, 1983

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Text concluded on 15 August 1983, except for a number of statistics which came in later.

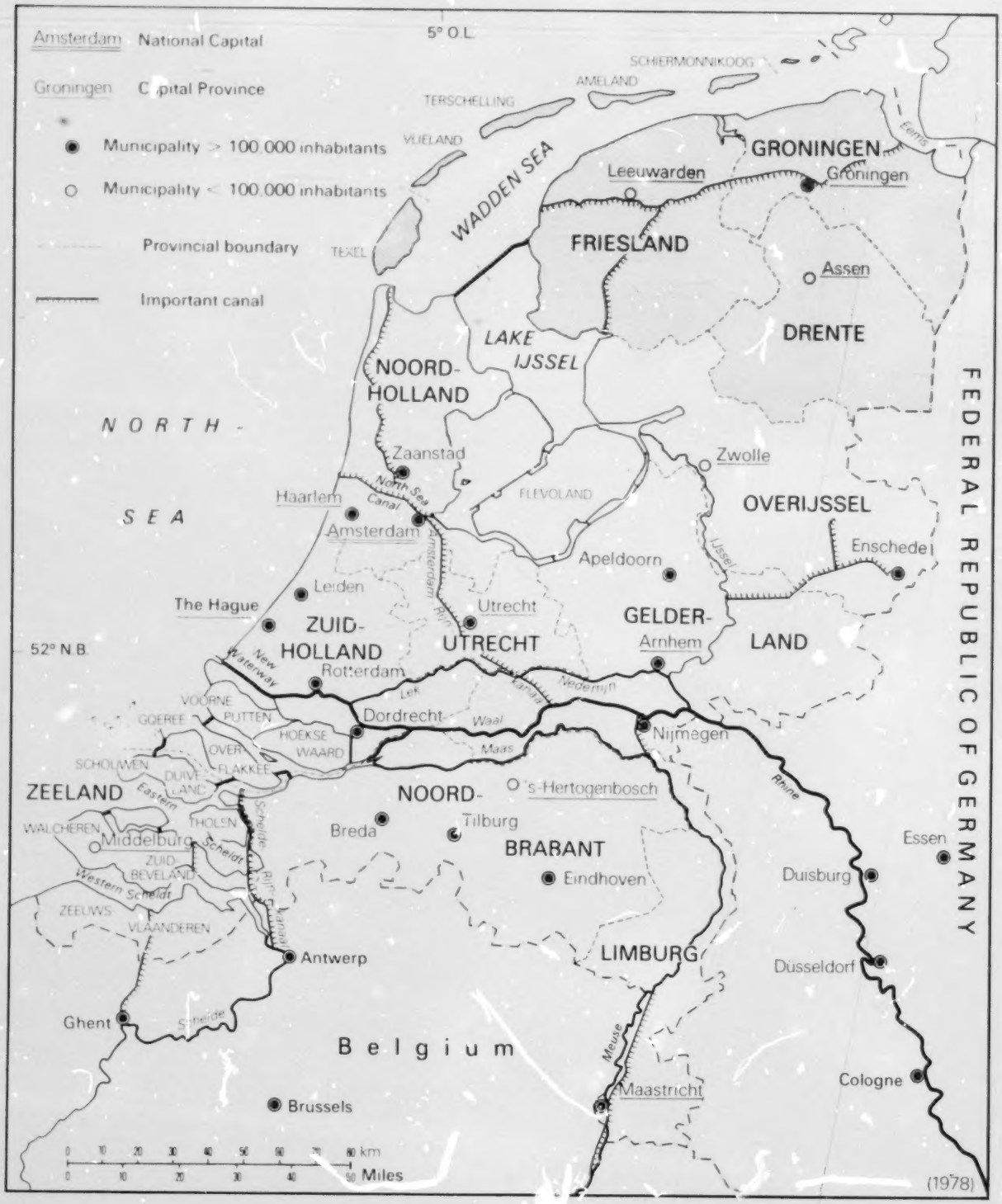

Fig. 1 – The Netherlands and the Northern Provinces (N.B. the Island of [illegible] officially forms part of the province of North Holland).

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I – THE NORTHERN NETHERLANDS

I.1. Introduction –

'The Northern Netherlands, a large problem region in a small country' is part of the title of a periodical article written more than ten years ago (Tamsma, 1972). *)
During the past few decades the three northern provinces have been most in the headlines because of their socio-economic problems. During the 1950's and '60's, when the economy was expanding rapidly, the North lagged behind the west of the country (particularly the 'Randstad'), one consequence of which was that many people migrated from the North to the Randstad. During the 1970's it was these economically weaker provinces which were hardest hit by the recession.
The government has tried by means of a number of measures to turn the tide in favour of the North, but the results have generally fallen short of expectations. Attention will be directed to this problem in Section 4 of this chapter, which will present a case study of the port of Delfzijl, one of the development centres in the government's regional policy. In the two preceding sections other aspects will be discussed which make the North of the Netherlands an interesting region for the geographer to study.

In the first place there is the **Wadden Zone**, consisting of a series of islands separated from the mainland by an area of sea which largely dries out twice a day at low tide and is covered by the sea again at high tide. Primarily because of their richly varied and in some cases unique flora and fauna, the islands and the sea form a natural area of international significance, but nature is threatened here by numerous human activities, resulting in an often extremely difficult weighing up of mainly economic interests against those of nature conservation. Section 2 of this chapter consists of a brief review of the aspects just mentioned, concluding with a case study of the island of Ameland.

In Section 3 the emphasis is on the **landscape** of the northern provinces. The region is characterised by rich variety in this respect, due in part to the fact that it is situated partly in the 'High Netherlands' and partly in the 'Low Netherlands' (with the + 1 metre contour forming the boundary; see fig. 9, p. 17). Within this major division a great diversity of landscapes can be distinguished, based upon geological, geomorphological, pedological, hydrographic and other differences.

The history of human settlement and exploitation of the region also displays a wealth of diversity.

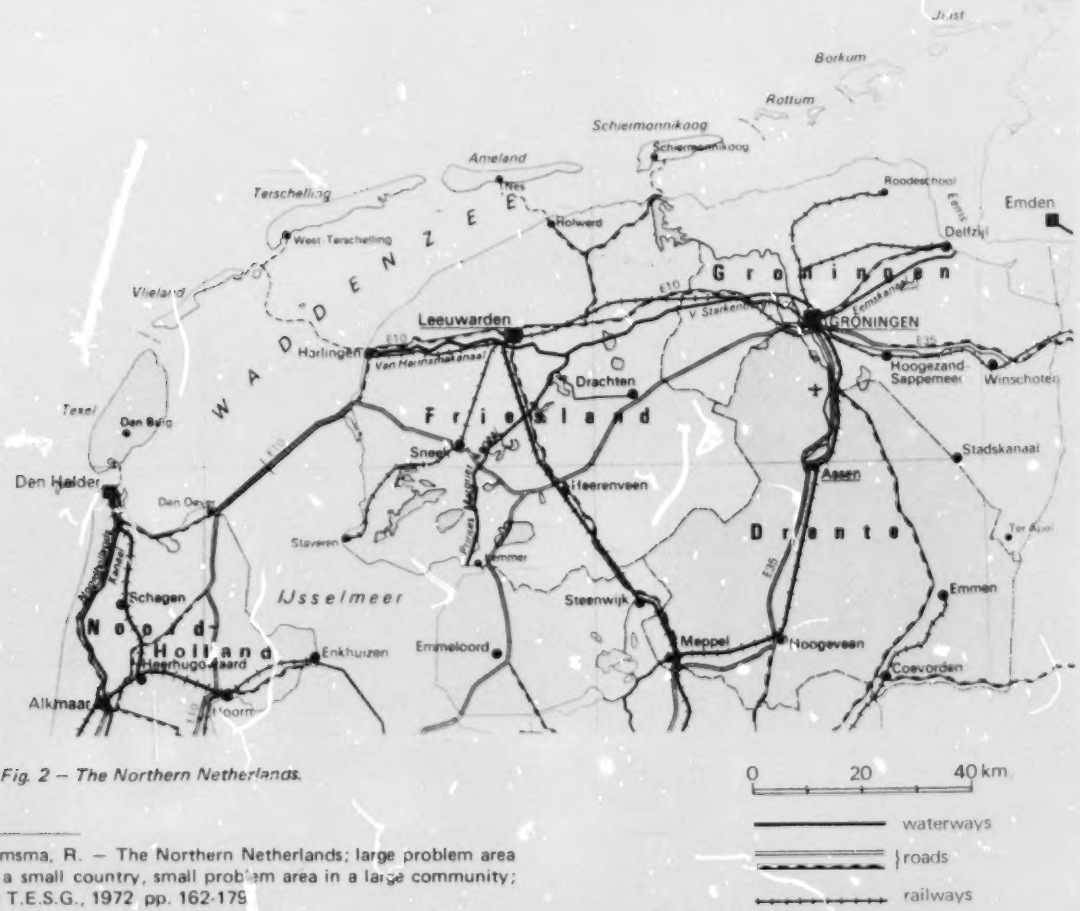


Fig. 2 – The Northern Netherlands.

*) Tamsma, R. – The Northern Netherlands; large problem area in a small country, small problem area in a large community; in: T.E.S.G., 1972 pp. 162-179

All this results in striking differences in landscape, field pattern and settlement forms and in land use and infrastructure, some of which are illustrated with the aid of an analysis of extracts from topographical maps and aerial photographs of three different types of village and their surroundings.

Definition

In general, in this article, the expression **Northern Netherlands** refers to the area covered by the provinces of Groningen, Friesland and Drenthe.
This makes it possible to use the large amount of statistical material collected and published by central and provincial government using the same boundaries (cf. Table 1 and fig. 2).

Only where reference is made in this article to the Frisian Islands will this definition sometimes be departed from, since the island of Texel (pronounced Tessel) forms part of the province of North Holland and is therefore not included in the Northern Netherlands. (The province of North Holland is always regarded as part of the Western Netherlands for statistical purposes.) In some of the statistical summaries given here, however, Texel is treated as one of the Frisian Islands and, accordingly, as forming part of the Northern Netherlands.

Table 1 – Some basic data	Number of municipalities	Area in km² total	Area in km² dry land	Population on 1st Jan 1982	Pop. density per km² of land	Pop. growth in % 1 Jan 77 - 1 Jan 82
City of Groningen	1	82,52	79,80	165 146	2069	+ 2,1
rem. prov. Groningen	49	2514,62	2256,78	393 989	175	+ 3,0
prov. Groningen total	**50**	**2597,14**	**2336,58**	**559 135**	**239**	**+ 2,8**
Leeuwarden	1	64,76	63,26	84 689	1339	0,9
Frisian Islands in Friesland	4	412,57	220,89	9 652	44	+ 1,9
rem. prov. Friesland	39	3331,32	3068,85	498 033	162	+ 5,7
prov. Friesland total	**44**	**3808,65**	**3353,00**	**592 374**	**177**	**+ 4,6**
prov. Drenthe total	**34**	**2680,55**	**2654,07**	**423 627**	**160**	**+ 3,3**
Northern Netherlands total (excl. Texel)	128	9086,34	8343,65	1 575 136	189	+ 3,6
Texel	1	180,36	156,76	12 582	80	+ 3,0
Northern Netherlands total (incl. Texel)	129	9266,70	8500,41	1 587 718	187	+ 3,6
NETHERLANDS	**774**	**37 313**	**33 940**	**14 285 829**	**421**	**+ 3,4**

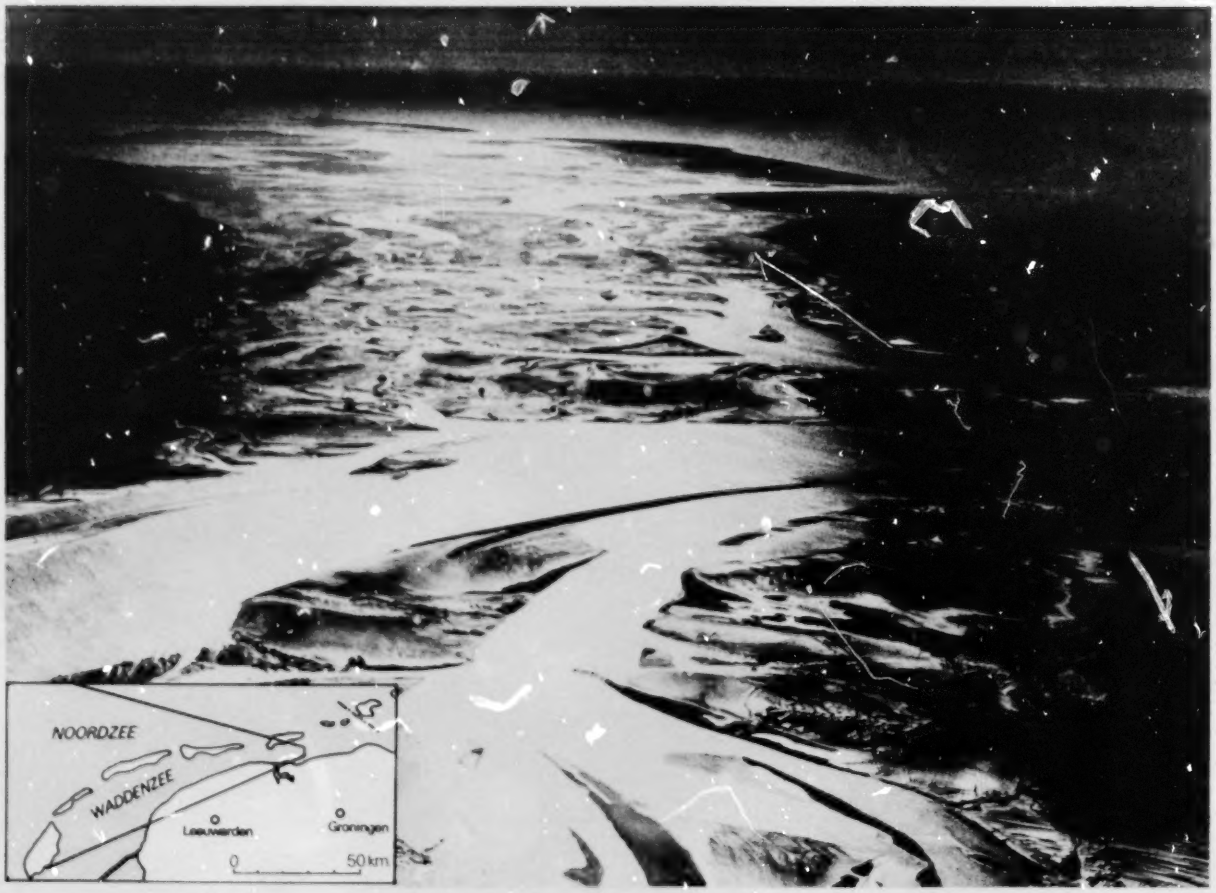
Source: CBS – Population of the Netherlands Municipalities on 1st January 1982.

I.2. The Wadden Zone

I 2.1. Origins

Geologically the Wadden Zone is a young region. Roughly speaking, it has assumed its present character only during the past 1,000 years and, moreover, continual changes are still taking place. The region consists of a series of islands lying parallel to the coast and of a shallow sea lying between these islands and the mainland. Much of the sea falls dry at each low tide (photo I). The Wadden Zone extends from Den Helder in the Netherlands to Esbjerg in Denmark. It has a total area of about 6,600 km², of which half lies in West German territory, 40% in the Netherlands and 10% in Denmark (fig. 3).

Fig. 3 – The Wadden Zone in the Netherlands, the Federal German Republic and Denmark.



Photograph 1 – *Part of the Waddenzee, looking west, with part of the coast of Friesland on the left and the islands of Ameland and Terschelling on the right.*

The islands arose on sand-bars, which were formed during the early centuries of the Christian era as a result of the rise in sea level after the last Ice Age. A combination of waves and wind created sandbanks on which dunes formed. Between the sand-bars rivers from the interior were able to discharge their waters. At high tide the tidal flats behind the bars were covered with water from the North Sea.

Of the Dutch Frisian Islands only a part of the island of Texel includes an outcrop of boulder clay, which reaches a height of ten metres above sea level. In addition, this island, like all the other Frisian Islands, has a beach and a dune zone along its North Sea coast, behind which is an area of reclaimed saltmarshes. On most of the islands the saltmarshes are protected by a dike on the side of the Wadden Sea. On the south-east side of the islands there is generally an area of saltmarsh dissected by tidal channels, which remains largely dry, even at high tide. This area passes gradually into the tidal flats which fall dry only at low tide (fig. 4).

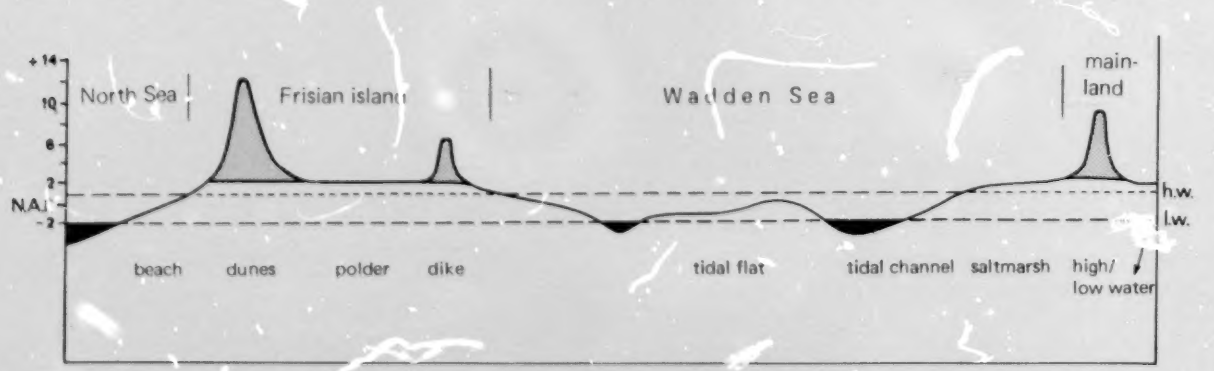


Fig. 4 – Cross-section of the Wadden Zone at right angles to the coast.

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Fig. 5 – Land reclamation along the Wadden Sea.

The tidal flats contain a widely branching system of channels through which, twice daily, the sea pours in and out at high and low tide. Thus, four times a day, vast quantities of water flow through the openings between the islands from the Wadden Sea to the North Sea or vice versa.

These movements create constant flux in the region, characterised by a short and regular rhythmic cycle. Viewed in the longer term also, however, the Wadden Zone is always in a state of movement and change. The tidal channels change their position and, because the wind and marine currents come mainly from the west, all the islands have a tendency to crumble on the west and to grow to the east. Nowadays of course, the influence of man in these processes cannot be discounted. Attempts are being made to halt the processes of erosion by means of coast protection works and by holding down the dunes with vegetation, and to encourage the accumulation of the chain of dunes by erecting fences to catch the sand, for example. Efforts have also been made for centuries to encourage accretion along the mainland coasts by the construction of breakwaters parallel to the shore. Once the surface of the mud rose high enough it was surrounded by a dike, beyond which the process could be repeated. In this way large inlets were reclaimed a little at a time from the sea (fig. 5) and broad strips of land were impoldered along the coasts of Groningen and Friesland.

Photograph II – *Birds (waders) on the tidal flats of the Wadden Sea.*

I.2.2. An important natural area

It is mainly the flora and fauna of the tidal flats and islands which give the region its special character and its great significance as a natural area. In the first place there are the birds for which the tidal flats, uncovered twice daily by the tide, form an unequalled feeding ground. The floor of the Wadden Sea supports an enormous wealth of seabed creatures, such as shrimps, mussels, various worms etc. (photo II).

A distinction must be made between migratory and breeding birds. During the migration periods an estimated one million migratory birds touch down in the Wadden Zone, where they find food and rest before and after their long journeys (to and from Siberia, Scandinavia, Iceland, Greenland and N.E. Canada, for example). Some of these birds spend the winter in the Wadden Zone, while others migrate farther southwards. Among the commonest species are oyster catchers, black-tailed godwits and brent geese. The most important breeding birds are gulls, ducks, terns, various waders etc.

The seal is another striking member of the fauna of the Wadden Zone, but its numbers have greatly declined. While there were still 1400 in about 1967, there are only a little over 500 at the present time.

Less spectacular, but certainly of great importance, is the 'nursery function' of the Wadden Sea. It is estimated that one third of the fish population of the North Sea is dependent upon the Wadden Sea as a spawning ground (various species of flatfish, herring etc.).

I.2.3. Threats to the Wadden Zone

Various human activities in and around the Wadden Zone have direct or indirect consequences which accord badly with the goal of conserving the great natural worth of the Wadden Zone. This is a conflict which theoretically exists all over the world, but it has to be noted that the Wadden Zone is extremely vulnerable ecologically. Its flora and fauna form parts of food chains from which links cannot be removed with impunity. The disappearance of the porpoise and the decline in the seal population – both animals which stand at the end of a food chain – are among the significant symptoms in this respect.

To summarise briefly, the following threats may be mentioned (see fig. 6, pag. 12/13).

1 – *Changes in the landscape*

As a result of human acitvities changes occur in the landscape which are not caused by the natural dynamism of the Wadden Zone referred to earlier. The most important of such changes is the **reclamation** of parts of the Wadden Sea. Besides the impoldering of inlets and strips along the coasts of Groningen and Friesland already mentioned above and the creation of polders on the islands, plans also existed until the 1960's to drain large parts of the Wadden Sea, thus linking the islands with each other and with the mainland.

In 1974, a committee of inquiry appointed by the government advised against such large-scale reclamation schemes and, partly because of the much increased awareness of the environment since then, they now seem to have been finally shelved. A few plans for smaller, local reclamation schemes have also been modified or withdrawn since then. These include the Balgzand scheme east of Den Helder. A plan for constructing a drainage and ship canal in the Dollard, on the seaward side of the dike, right across the mudflats and saltmarshes, met the same fate.

A lock had already been built for this canal on Dutch territory at a cost of 25 million guilders and is now useless. There are still plans to reclaim some of the saltmarshes along the Frisian coast.

Another threat to the landscape in a number of places is overintensive use for **open-air recreation**. The dune belts on the islands are particularly sensitive in this respect.

2 – *Pollution of water, air and soil*

There are various sources of such pollution, some of them situated at great distances from the Wadden Zone. In the first place, there are the industrial activities around the Wadden Sea. There are industrial zones at Den Helder and Delfzijl and on the opposite side of the Dollard and Eems in the Federal Republic of Germany. Another source of industrial pollution are the industries in the east of the province of Groningen, particularly potato-processing, the effluent from which was formerly discharged into the Dollard and the Wadden Sea through a system of canals and is now taken there through a specially constructed pipeline. Plans for ports with factories, power stations etc. contained in the Eemshaven Project and the proposed 'Dollarthafen' in the Federal Republic of Germany also constitute serious threats.

Sources of pollution at a much greater distance are the industries and the large cities along the Rhine in Switzerland, France, the Federal Republic of Germany and the Netherlands.

The highly polluted water of the Rhine enters the North Sea at the Hook of Holland and is transported northwards by marine currents. Some of the water even reaches the Wadden Sea by a shorter route, i.e. via the River IJssel, Lake IJssel and the discharge sluices in the Lake IJssel Barrier Dam (Afsluitdijk).

Another source of possible pollution is created by the activities surrounding the exploration and exploitation of natural gas deposits in and around the Wadden Zone. Such activities are concentrated mainly on and to the north of the island of Ameland and in the area of the Wadden Sea between Harlingen and Vlieland (near the uninhabited island of Griend).

Moreover, some of the transport and treatment of the natural gas and petroleum derived from the Dutch

sector of the North Sea takes place in the Wadden Zone (gas pipelines to terminals and treatment plants on the coast).
Under normal circumstances these activities should not cause much pollution but, in the event of an accident, the consequences for nature and the environment may be very serious, particularly if there is any leakage of oil.

3 – *Disturbance of peace and quiet in the area*
The animal life in the Wadden Zone may be seriously harmed if disturbed by noise and movement. Such disturbance may arise from a number of "sources', including the sometimes excessively large numbers of holidaymakers who temporarily inhabit the Wadden zone during the summer season. Each year there are more than a million visitors (as against a total resident population of the Frisian Islands of some 22,000).
The coming and going of yachts and cabin cruisers, in particular, can seriously disturb birds and seals.
A second source of disturbance are the activities already mentioned associated with the exploration, exploitation and transport of natural gas, such as the laying of pipelines. Finally, the greatest noise is caused by military exercises involving gunfire, low-flying jet aircraft etc. There are firing ranges, for example, on and around the islands of Vlieland, Terschelling and Texel, military training grounds in the area of the Lauwersmeer, and an air force base near Leeuwarden.

I.2.4. Policy on the Wadden Zone
Reference has already been made above to the government committee which recommended in 1974 abandoning all plans for large-scale reclamation of the Wadden Sea. The government subsequently published in 1976 its first version of the 'Wadden Sea Report' (Nota Waddenzee). Just how much and how rapidly ideas about a region such as the Wadden Sea changed during the 1970's may be judged from the principal objective of this report, which is given as follows:

'The protection, the conservation and, where necessary, the restoration of the Wadden Sea as an area of wild nature'.

This does not mean that all other activities have to give way to nature conservation but that they do have to be examined in the light of the main objective. The decision whether or not to carry out such activities has to be made individually for each case by means of a weighing-up process, in which stock has to be taken as completely as possible of the consequences of existing and proposed activities.

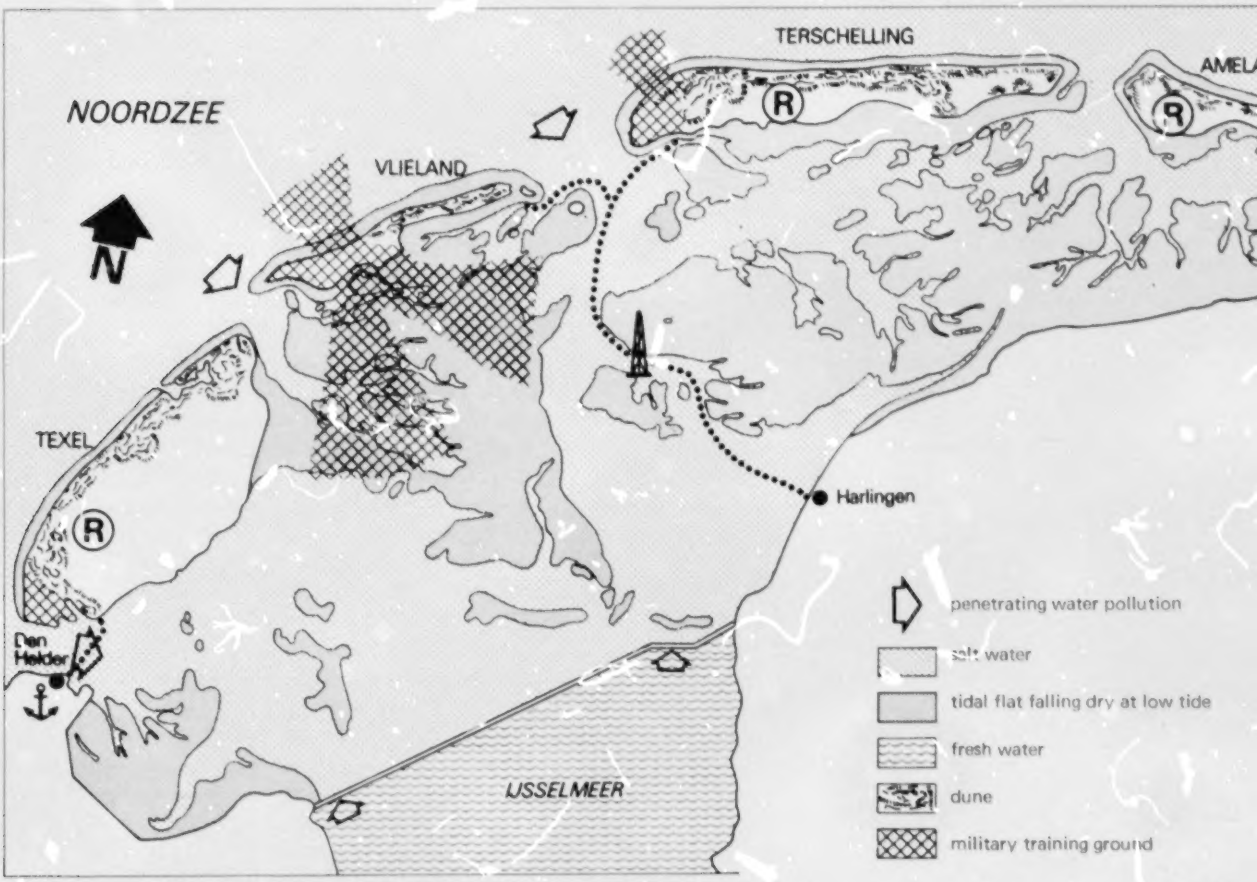

Fig. 6 – The Wadden Zone and its threats.

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The government report proposes for example

- *to abandon* large-scale land reclamation projects;
- *to seek to stabilise, inter alia,* the level of recreation and military activities;
- *to exercise great care* with respect to:
  - the maintenance or reinforcement of dunes, dikes etc.,
  - the environmental aspects of activities in the field of mineral exploitation and manufacturing,
- *to work towards the reduction* of:
  - the discharges of sewage effluent into the Wadden Sea,
  - some military activities,
  - the use of speedboats and helicopters.

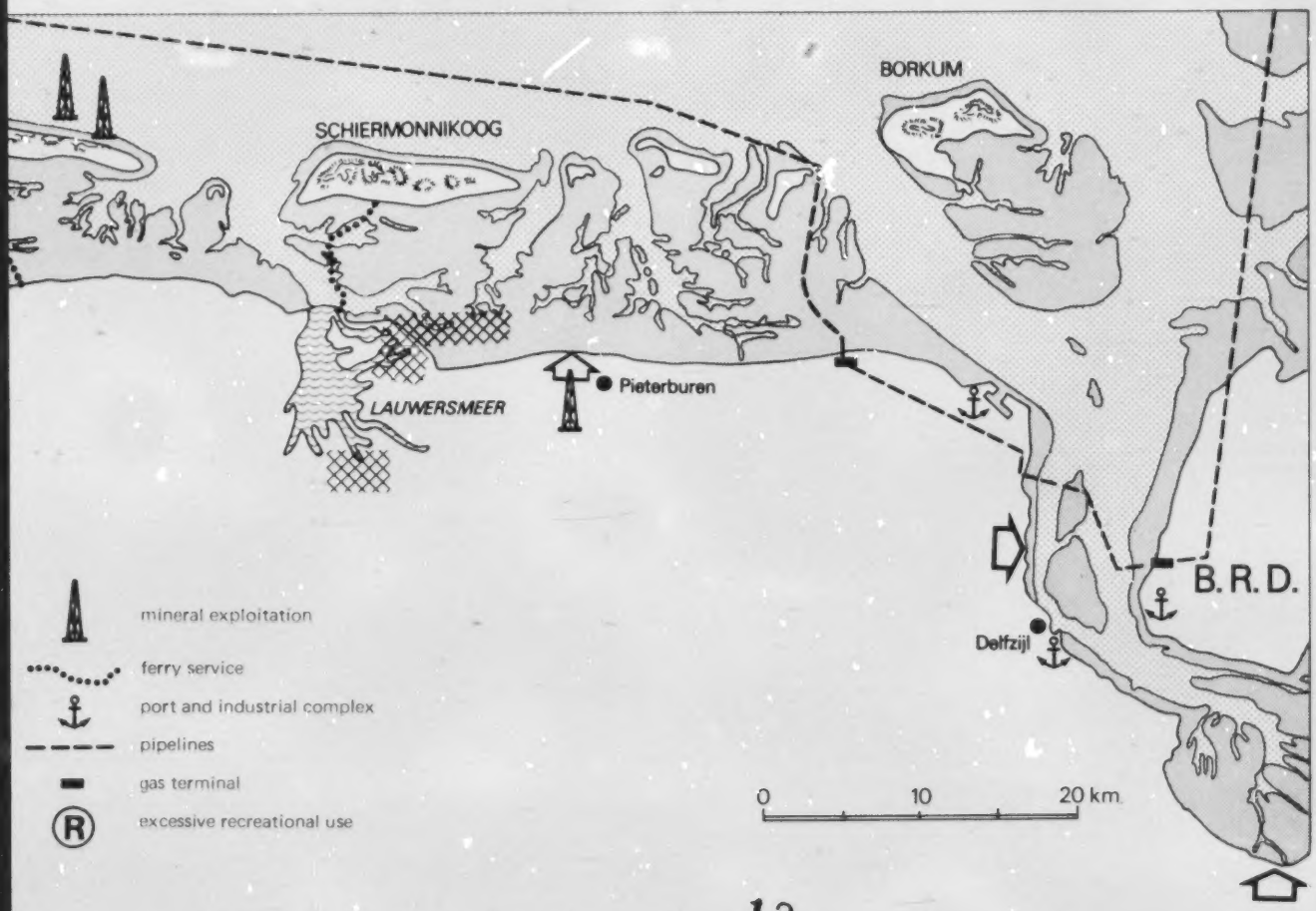
In order to be able to realise these objectives the report proposes allocating the whole of the Wadden Sea administratively to the three surrounding provinces and to the 28 municipalities along the mainland coast (the Report is not concerned with the five major Frisian islands, but only with sea area and the uninhabited islands).
In order to work out the policy it is recommended that the following bodies should be set up:

- an Interdepartmental Wadden Sea Commission consisting of representatives of ten ministries;
- a Wadden Zone Co-ordinating Committee, within which consultation can take place between central, provincial and municipal government;
- a Wadden Advisory Council, on which various interested organisations are represented and which can offer advice to the authorities.

Lastly, the Report makes a strong plea for close co-operation with the Federal Republic of Germany and Denmark and for the drawing up of an international statute for the Wadden Zone.

Public Participation Procedure

In view of the great importance of policy plans for the Wadden Sea, the Wadden Sea Report is subject to the 'PKB-procedure' (PKB = Planologische Kernbeslissing (Key Planning Decision); on this subject see, for example, the following IDG publications: 'Compact Geography of the Netherlands', p. 38; IDG Bulletin, 1979/80, pp. 18-19 and in this bulletin p. 49).
The Draft Report (= Part A: 'Government's Policy Proposals') was published in May 1976, displayed for inspection in a large number of places and explained at information meetings. More than 400 individuals and organisations took advantage of the opportunity to make their views known to the Ministry of Housing and Physical Planning.



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A summary of these views was published as Part B of the Report. This was followed by Part C, the Report of the 'Physical Planning Advisory Council', a body made up of representatives of interested organisations and experts in the administrative and technical fields.
On the basis of these views and of consultation with the provincial and municipal authorities, the government published in December 1978, as Part D, the 'Government's Decision with respect to the Report about the Main Lines of Development of the Wadden Sea'. This version of the report was the subject of discussion in Parliament in 1979 and the beginning of 1980. 27 motions were tabled during the proceedings, ten of which were adopted. The most striking aspect of the debate is the clear wish expressed by the House that the whole of the policy for the Wadden Sea should be incorporated in legislation, so that it becomes binding. An insertion to this effect was included in the final version of the report (Part E). 'Text of the PKB adopted after the Parliamentary discussion', which was published in November 1980.

Opinions about the policy on the Wadden Zone
Besides the concern of the government with the development of the Wadden Zone, mention should also be made of the activities and attitudes of at least two other groups. These are the nature protection movement and the local population.
A number of associations and foundations take an interest in nature protection in the Wadden Sea, which they display by giving information to the public, making use of the public participation procedures, advising the government, protesting against undesirable developments etc. The most important of these bodies is the 'National Association for the Conservation of the Wadden Sea', which was established in 1965. The membership of this association greatly increased during the 1970's, from 10,000 in 1971 to 36,000 in 1983 (for the association's address see the list on p. 42).

The association's name does not leave any doubt about its objectives, which are very closely related to the principal objective of the government's Wadden See Report referred to on p. 12. As far as the weighing-up processes relating to economic and other activities in the Wadden Zone referred to in that report are concerned, it will be obvious that the association prefers a policy that gives higher priority to nature conservation.

Among the inhabitants of the Wadden municipalities, however, there exists a much wider range of attitudes towards the region's future. There are, of course, many people who support a policy aimed at a stringent conservation of the environment, but where decisions have to be taken affecting local economic activities, other motives come to the fore. The general economic recession during the past ten years, which has generally been felt more strongly in the northern provinces of the Netherlands than in other parts of the country (cf. Section I.4.), will obviously have played a part in this.

Here are a few examples:

- the Port Authority of Delfzijl and the Province of Groningen are making great efforts to achieve an expansion of port and industrial activities along the Eems and Dollard. Such an expansion is of great importance for the economic development of the north east of the province of Groningen.

- the farmers along the north coast of the province of Friesland are strong advocates of a continuation of the land reclamation works in that area. Reclaimed saltmarshes mean a welcome expansion of the area for the growing of such crops as seed potatoes.

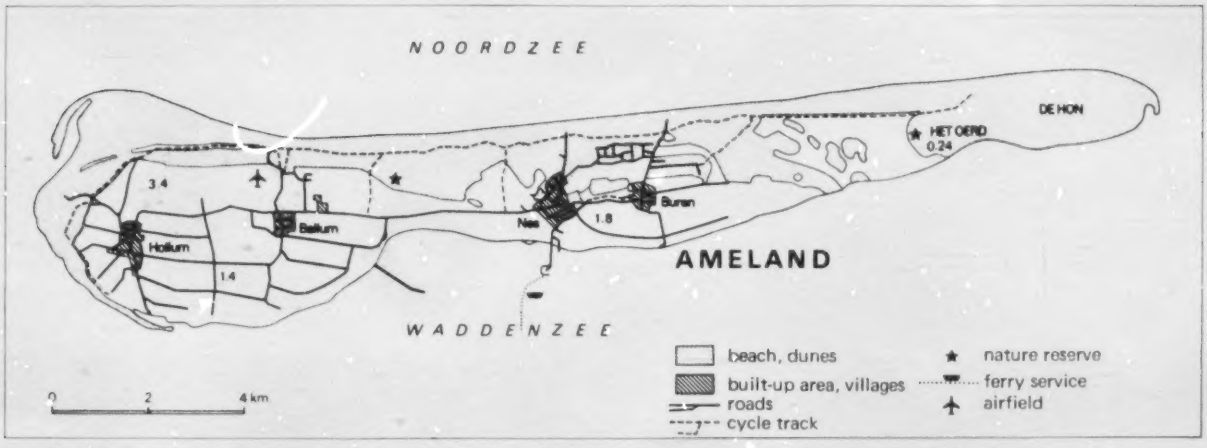

Fig. 7 – The island of Ameland.

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– some of the inhabitants of the Frisian islands – particularly the tradespeople – have little enthusiasm for measures to stabilise or curb tourism. In general, the islands have provided only a meagre subsistence for the majority of their inhabitants during the course of the centuries and tourism has at last brought about a marked improvement in this state of affairs.

I.2.5. An example: the island of Ameland

Table 2 shows that both in area and population Ameland occupies third place among the Dutch Frisian islands.

The physical structure shows the usual picture: a sandy beach and a strip of dunes along the north and west coasts, with a flat polder landscape to the south (fig. 7). Only in a few places do the dunes on Ameland exceed an altitude of 25 metres above sea level. The island ends on the east side in an area of sandy flats known as 'De Hon'.

The mobility of the Frisian Islands referred to earlier is also clearly detectable here. For example, the bunkers built on the west side by the German occupying forces during the Second World War have since disappeared almost entirely into the sea. It is hoped, with the aid of extensive coast protection measures – including a defence of vertical mats made of woven willow branches weighted down with stones, extending three kilometres and reaching a depth of 25 metres in places – to bring the process of erosion to a standstill but, until recently, the Hon on the east side was growing at an average rate of one kilometre per century.

Table 2 – Area and population of the inhabited Frisian Islands.

	Land area in km^2	Population 1st Jan 1982
Texel	156,8	12582
Vlieland	35,0	1059
Terschelling	89,7	4605
Ameland	**57,5**	**3092**
Schiermonnikoog	38,8	896

Photograph III – *The island of Ameland looking from west to east, with the beach and the dunes on the left of the village of Hollum in the foreground. To the left of the village, a large camping site.*

In the last century there was for a short time a permanent connection between Ameland and the coast of Friesland in the form of a dam nine kilometres in length, but this was able to withstand the attacks of the sea for only a few years. In 1882 it was decided no longer to repair the damage. Traces of it can still be seen at low tide.

Population and means of subsistence

For many centuries Ameland was a manor belonging to the family which inhabited a castle near the village of Ballum. The population subsisted on fishing and arable and livestock farming.

Fishing declined continuously during the course of the 19th century, and the last fishing boat was sold in 1897. In addition, Ameland during the centuries provided seamen for the Dutch trading fleet. The prosperity which this activity brought can still be seen in the many fine old houses in the Ameland villages of Hollum, Ballum, Nes and Buren. During the 17th century the Ameland islanders were active in whaling and a memento of this period are the whales' jaw bones still used as farmstead boundaries.

After 1940 only the agricultural activities remained, but after the war tourism rapidly developed as a new source of income. As far as agriculture is concerned, there was formerly a marked distinction between the private ownership of the relatively somewhat higher-lying and therefore well-drained arable lands and the communal use for grazing of the lower lands, which were subject to regular flooding. With the construction of the dike along the south coast, in 1915, this distinction disappeared together with the flood danger. The communal lands were divided up and, with later land consolidation schemes, redivided. The number of holdings declined and the average size of holding increased. Some of the farms were relocated from the villages to the polder. These developments were accompanied by increasing specialisation in dairy farming. A co-operative creamery was opened, the products of which were transported to the mainland on the ferry boat.

With the increasing intensification and enlargement of scale on the mainland the Ameland farmers and their co-operative creamery were in danger of going under in the competitive struggle, but a solution was found in the construction of a 15-kilometre milk pipeline from Ameland to Holwerd on the north coast of Friesland. Since 1978, 52 Ameland dairy farmers have annually been pumping 12 million litres of milk through this pipeline to a creamery on the mainland. The island creamery was closed. At the present time, 80% of the farms on Ameland enjoy a secondary income from tourism.

Photograph IV – *Drilling for natural gas on the eastern point of Ameland.*

The fact, for example, that the cattle remain outside day and night during the summer makes it possible for groups of young people to camp on the farmsteads. Much use is made of this opportunity by campers not only from all over the Netherlands, but also from West Germany etc.
The guide for 1983 published by the Ameland Tourist Association (V.V.V.) lists 12 hotels, 14 guest houses, 38 bed and breakfast addresses, 210 addresses of bungalows for hire (the number of bungalows per undertaking varies from 1 to 41), 65 addresses for caravan hire (1 to 62 caravans), 90 furnished houses or flats to let, 45 camping farms and 6 camp sites.
The number of tourist beds on the island is about 35,000, which is more than eleven times the island's population. The number of holidaymakers in 1978 was 172,000, which was more than four times the number in 1960. To these must be added a considerable number of day visitors.
This large-scale tourism forms an important source of income which has now become an indispensable part of the island's economy, but which nevertheless brings its disadvantages:

- the large number of visitors causes serious local damage, particularly to the vegetation of the dunes;
- the excessive number of cars during the summer months causes an overloading of the modest road network and congestion of the car parking facilities;
- the large number of visitors produces an enormous quantity of refuse and considerable consumption of water. The latter creates a problem in dry summers, because Ameland is wholly dependent upon its own water resources, i.e. upon the supply of rainwater which accumulates in the island's dunes.

Exploitation of natural gas

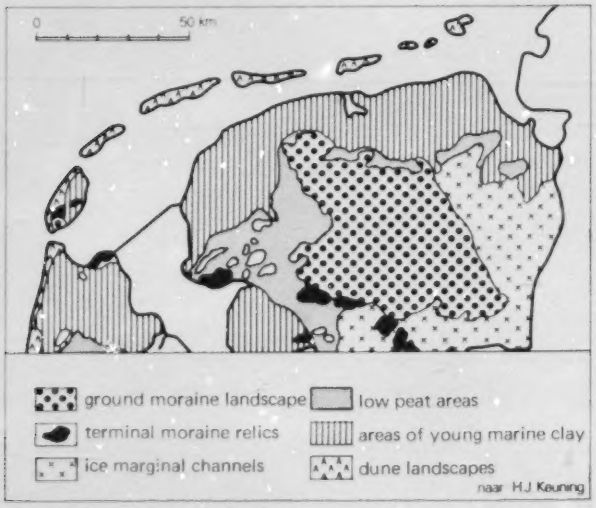
Ameland falls within the sector within which the N.A.M. (Netherlands Petroleum Company) and Mobil Producing Netherlands inc. have been jointly granted the 'Noord-Friesland' natural gas and oil concession (1979).
Exploratory drilling is taking place near Hollum and on a platform in the North Sea to the north of the island. A third drilling location is now coming into operation on the edge of the dune area known as 'Het Oerd'. There have been widespread protests against the latter location.
The objections (environmental pollution, disturbance of the peace and spoiling of the landscape) have been met in part by the throwing up of an artificial complex of dunes around the drilling site (photo IV). The artificial dunes also give protection against extreme high tides. In addition, all the equipment used has been sprayed in a sandy colour and the drilling activities are halted each year during the tourist season (from 1st April to 1st October).

I.3. Landscape and settlement forms

I.3.1. Introduction

Origin of the landscape

A study of figs. 8 and 9 shows that the central part of the landscape of the Northern Netherlands is formed by the so-called Drenthe Plateau, which also extends over a part of the province of Friesland. This relatively high-lying plateau (5 25 metres above sea level) consists largely of sand, which was deposited by land ice from Scandinavia during the penultimate or Saale-Riss glaciation. The plateau rises somewhat towards the south and ends in a series of terminal moraine relics formed of boulder clay.



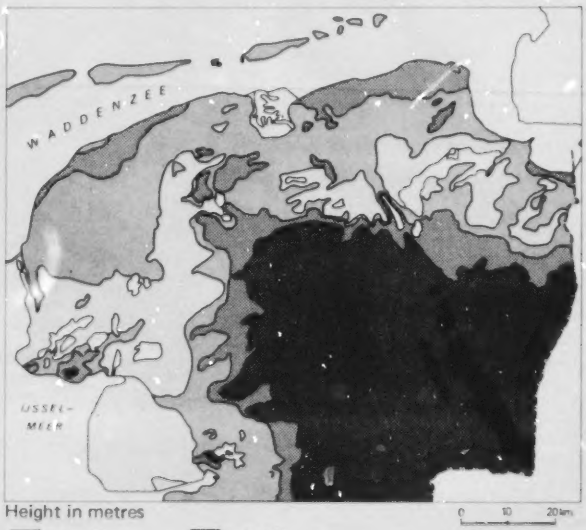


Fig. 8 – Landscape types of the Northern Netherlands.
Fig. 9 – Contour map of the Northern Netherlands.

Similar relics are to be found at a few places in the North East Polder, in South West Friesland and on the islands of Vlieringen and Texel. The plateau ends rather abruptly on its east side in a ridge of pushed-up material 15 to 25 metres in height, known as the Hondsrug, or 'dog's back'. On the west there is a more gradual transition to lower-lying areas of peat and clay.

In the plateau the streams carrying the meltwater of the land ice to the lower-lying areas surrounding the plateau cut wide and rather flat-floored valleys. In these depressions, as well as in the broad ice marginal channels of the Vecht and Hunze and in the still lower-lying areas west and north of the plateau, these developed peat bogs, which completely surrounded the Drenthe Plateau. This bog zone attained such an extent on the east side that it formerly acted as a natural frontier between the Netherlands and Germany.

Along the coasts of Groningen and Friesland deposits of clay were laid down by the sea. Because of the relative rise in sea level this process has been taking place since the end of the last glaciation.

The deposits on the coast consist of coarser material, are less liable to settlement and silted up to a higher level. Farther inland finer silt was deposited, often over a peaty subsoil, so that these areas were subject to greater settlement and came to lie at a lower level than the coastal areas. In the province of Groningen, in particular, there is a striking difference between the area to the north east of the city of Groningen, lying below sea level, and the 'High Land' near the north coast, lying at more than one metre above sea level. This situation naturally gave rise to serious drainage problems.

In this clay region there originally existed broad arms of the sea which extended far inland, but during the course of the centuries they silted up and were enclosed by dikes (see fig. 5, p. 10).

At other places also along the Frisian and Groningen coast, new land has been formed up to the present day. After about 1300, when the whole coast was protected by dikes, clay continued to be deposited in the Wadden Sea in front of these dikes. In reclaiming land the 'Schleswig-Holstein' method was followed. The deposition of silt was encouraged by the construction of osier fences forming compartments in which the seawater was trapped. The accretion process was accelerated by digging trenches within the compartments and then dredging out the trenches. In due course a fresh strip of land had silted to such a height that vegetation cover developed. During the summer, when the danger of flooding was at a minimum, sheep could graze on it.

When the saltmarshes had silted high enough to permit the development of vegetation requiring fresh water, they were surrounded by a dike and the process could be repeated. In this way there arose a succession of parallel sea dikes, which are clearly visible in the landscape (see fig. 10).

Another region on which man has clearly left his stamp – not only on the landscape but on the very soil – is that of the peat colonies of Groningen and Drenthe.

In order to obtain fuel dried peat was dug here for centuries. To begin with, a network of canals was dug through the peat bogs, serving in the first place for drainage, but later also for the transport of peat.

This exploitation of the peat began as early as the Middle Ages, with the local monasteries among the pioneers. During the 17th century there was a great expansion in the digging of peat, mainly as a result of the great demand for fuel in the towns of Holland and Germany.

Already at that date, the city of Groningen, which controlled the waterways and received the income from tolls, made it obligatory to prepare the land for agricultural use after all the peat had been removed. To achieve this, the top layer, which consisted mainly of heather sods, was put on one side when peat digging began and afterwards mixed

Fig. 10 – The Frisian coast north of Leeuwarden, scale 1 : 50,000. The former seawall runs past the villages of Hallum, Marrum and Ferwerd. The present dike runs parallel to it to the north west and, beyond that, lie successively the saltmarshes and the tidal flats.

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with the sand which formed the surface after the removal of the peat. The soil thus created, known as 'dal' soil, was infertile in itself, but possessed a good structure. The fertility was enhanced, originally by the application of manure and urban refuse (the latter being brought by the peat barges as a return cargo), and after the end of the 19th century by the addition of large quantities of artificial fertilisers.

Occupation, land use and settlements

The oldest traces of occupation in the Netherlands are of hunting peoples and are found in Drenthe. The builders of the Megalithic tombs (hunnebedden), settled Stone Age farmers of c.3500 B.C., have become widely known. They erected large chamber tombs from erratic blocks and the remains of these are to be found at many sites in Drenthe. During the course of the centuries an agricultural pattern developed, making use of the proximity to each other of heaths (occupying the dry sandlands) and more humid grasslands in the stream valleys. On the sandy soil around the village, areas were made fit for arable farming.

The extent of these 'essen' (open fields) was closely related to the quantity of manure available, which was mainly produced by the flock of sheep on the surrounding heathland. In addition, some cattle were pastured in the moister stream valleys. As a result of the regular application of soil mixed with manure from the sheepfolds, the open fields became distinctly humped over the centuries. The share of each farmer in the open field was known. There were no roads over the open fields, so that the cultivation scheme and rotation of crops had to be communally regulated in order to prevent damage to each other's crops. The 'veld' (field), consisting of heath and waste, was owned by the community. The villages generally consisted of a disordered collection of farms, connected by paths (later roads) over the tree-planted 'brink' (green; photo V and Section I.3.2.).

Radical changes took place during the course of the last century when the relationship between the size of the open fields and the quantities of sheep manure available was disrupted by the introduction of artificial fertilisers. Large areas of heath could now be reclaimed. The mixed farm generally continued in existence, but there was a stronger emphasis on livestock farming (cattle, pigs etc.). On the open fields fodder crops such as rye, oats and fodder-beet continue to be grown.

After the Second World War farming developed on an individualistic basis, encouraged, among other things, by land consolidation schemes. These developments deprived traditional elements of the cultural landscape of their function. A few parts, such as the river valley landscape of the Drenthe A, have been preserved in their original state by means of management agreements between Staatsbosbeheer (the State Forestry Service) and the landowners. Only here and there are continuous areas of heathland still to be found, the largest being at Dwingeloo in southwest Drenthe.

Photograph V – *Village green at Annen in Drenthe.*

As early as about 500 B.C. population pressure on the Drenthe plateau became so great that some of the inhabitants migrated northwards to the areas of marine clay near the coast. During periods of marine regression they settled there on the slightly more elevated saltmarsh banks. When a period of marine transgression followed, however, it soon proved necessary to take measures against the threat of flooding. Small artificial mounds were thrown up of sods, domestic refuse etc., and on these farms were built. In Friesland such mounds were called 'terpen', in Groningen 'wierden' (and in Germany 'Wurten'). The terp villages are often round in shape, since this was the most suitable form for protection against periodic floods. The farmsteads were generally arranged along the edge of the terp, with the byres towards the fields, which fanned out radially. As a result of later raising and enlargement the 'house terps' might gradually coalesce to form 'village terps' (fig. 11).

In this way, therefore, people were able to keep their homes dry, but the fields were still regularly inundated by salt water. The beginning of dike construction was therefore of great importance. At first it generally took the form of embankments connecting the terps.

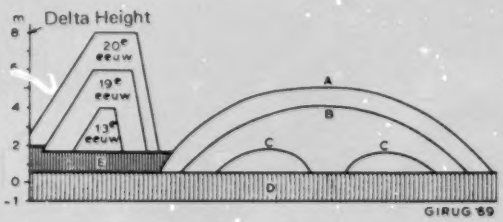

Fig. 11 – Diagrammatic cross-section through a dike and a terp (settlement mound) (after Schütte).

- D = Location of the first settlement on the saltmarsh
- C = Raised sites on which the dwellings were built (house terps)
- B = Extension of the house terps to form a village terp
- A = Level of the settlement flourishing round about the 13th century
- E = Later marine deposits

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By enclosing a piece of land completely by a number of such dikes, it could be protected against flooding. The excess water was eliminated by primitive means and, in this way, the first type of 'polder' was created. As the technique both of dike building and of drainage improved, there eventually developed a system of dikes along the whole coast. Later villages were sometimes built along these sea dikes and, at a still later stage, the risk was taken of building dispersed farms in the polders. A number of terp villages survive as 'relict settlements' and have thus become classic examples of geographical inertia. Other terps were wholly or partly dug away at the end of the last century and the earth, rich in organic matter, was used to improve soil fertility in the sandlands. Naturally, interesting historical finds were made when the terps were dug away. The remaining terps are now protected as cultural monuments.

Land use in the clay districts of Groningen and Friesland has always been closely related to relative elevation and to water management. On the drier lands – as in North Groningen – arable farming predominates, and in the moister areas – such as South West Friesland – livestock farming is the rule. By Dutch standards the farms in the northern marine clay district, especially in North Groningen, are large in area. Traditional forms of organisation, mainly introduced by the monastic orders, are largely responsible for this. This applies in particular to the right of extension and the right of perpetuity. The right of extension meant that all the land that was reclaimed in line with a holding belonged to the farmer in question. Only in the recent past was this right limited to 300 metres; the remaining land now goes to the State.
The right of perpetuity was a leasehold agreement at a fixed annual rent. The lease was heritable, but could not be split between a number of heirs. The farm buildings belonged to the tenant and had to be taken over by the landowner at the official valuation if the agreement was terminated. As a result of these favourable terms the tenant could be regarded as a kind of owner.
This forms of lease originally existed in the whole of the northern coastal region, but during the course of the 17th century the right of perpetuity diminished in importance in Friesland, while being maintained in Groningen.
A striking difference developed between the provinces of Groningen and Friesland with respect to the pattern of urbanisation. In the former province the city of Groningen assumed a strong central dominance at so early a date that other towns developed hardly or not at all. In Friesland, by contrast, a series of trading settlements grew up along a number of navigable channels in the mudflats.
From these developed eleven towns, the majority of which have now been far outstripped by the capital, Leeuwarden, but which formerly held their own with each other and were bitter rivals.

In the region of the former peat bogs, particularly to the east of the Drenthe plateau, permanent settlement did not take place until many centuries later. As described above, the process began in the 17th century whereby the bogs were drained by digging canals, the peat was dug out and exported as fuel and – especially from the 19th century – the underlying sand was made suitable for agricultural use. The exploitation of the peat went on into the 20th century and is still carried on at a few places in south-east Drenthe. The peat is now used to improve the soil in horticulture, for example, and as a raw material for the manufacture of active carbon (Norit). Because these areas were developed in a planned manner and in a relatively short time – as compared with the landscape of the Drenthe plateau – there was created a geometrical landscape that contrasted strongly with the landscape of the nearby sandlands.
Settlements developed along the canals and consequently often have an extremely elongated form. On the heavily manured 'dal' soils crops such as industrial potatoes, rye and oats are grown. Characteristic of this region is the concentration of industries based on agriculture.

From the processing of potatoes developed an industry which, in addition to potato flour, produces a wide range of adhesives and binding agents. A further well-known industry is the manufacture of strawboard, for which straw was also imported from the cereal-growing areas on the marine clay. (The often brackish groundwater of those areas did not lend itself to this kind of industry. At present waste paper is used as the main raw material. These industries are now experiencing problems not only because of the worsened general economic situation, but also because of the serious water pollution caused by their effluent (see, for example, the section on the pollution problems of the Wadden Sea; p. 11). At an early date yards for the repair and building of ships also developed along the canals. This industry has now migrated to the fringes of the peat colonies and to the new Eems Canal, because the capacity of the old canals is too small for the increasingly large coasters.

I.3.2. Anloo, a nucleated open field village on the Drenthe plateau

The village is modest in size, which is related to the limited area of grassland along the banks of the Anloo 'diepje' (stream). The nature of the local terrain is responsible for the development of three open fields: the Noord (North), Zuid (South) and Molen (Mill) 'essen'.

The intensively used cultivated land was surrounded by hedge-banks to keep out cattle and large game. Another striking feature are the many hedge-banks in the valley of the Anloo 'diepje'. The pastures are too high above the groundwater table for ditches to be dug and so hedge-banks were used to divide the pastures. The grassland and the open fields are surrounded by the 'field', the waste and common land, where sheep were pastured, so that these elements form the periphery of the village territory.

Anloo is a good example of a Drenthe open field village. Although it is a nucleated settlement, the Drenthe open field village is characterised by an apparent disorder, because the farms are grouped arbitrarily and do not follow a regular building line. A consequence of this form of building are the large and smaller open spaces between the houses. These open spaces are the 'brinken' (greens). Here are to be found tall oak trees, which provide, among other things, the timber for the beams of the farm buildings. The greens are also used for the temporary pasturing of cattle, for the holding of markets, celebrations, assemblies etc. As long as sufficient land is available within the village territory for reclamation and there is still scope for the village to expand, further greens may be created as the village grows. A striking feature is the marginal situation of the church. Because the origins of occupation go back into prehistory and the introduction of Christianity was a later development, the church finds a site on the fringe of the existing settlement.

The large church constructed of tuff is an indication of the important function which Anloo performed in the ecclesiastical organisation of the region. Because of the central position of this diaconal church, it was built of tuff, a kind of volcanic rock imported from the Rhine Valley. The central position of the church derives from an older central function within the legal organisation of the province, since Anloo was the principal seat of one of the six 'dingspelen' (legal districts) into which the administration of justice in Drenthe was organised.

*) The author of the text of this and the two following sections is drs. Ch. van Welsenes.

Photograph VI — *The nucleated open field village of Anloo looking north. On both sides of the village are the open fields. On the horizon is the former communal waste, now used partly for recreation.*

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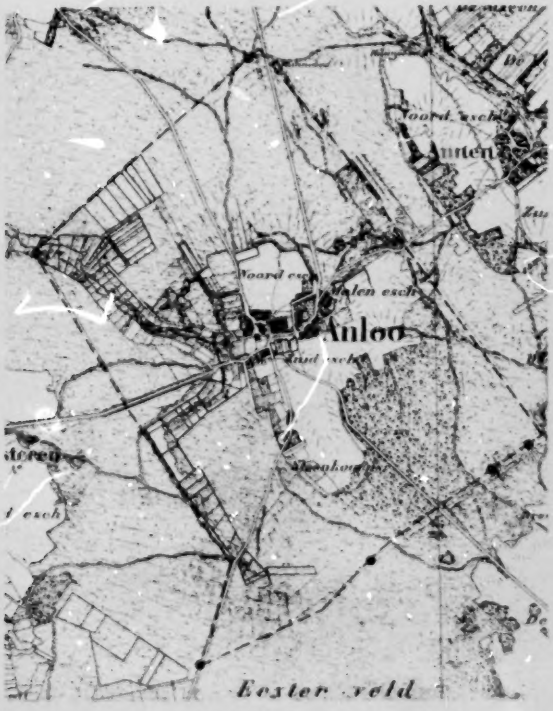
On the east side of the village is the 'Molenes' (Mill Field), which derives its name from the corn mill. Because the open fields were the most elevated treeless areas of the village territory, they were excellently suited for the siting of a windmill. The processing of agricultural products has persisted on this site up to the present day, albeit in a modified form. After the rise of agricultural co-operatives, the co-operative creamery was established here.

On the fringe of the village territory, beyond the open fields and the pastures, are to be found the common lands. Here the sheep were tended which were needed for the supply of manure to the open fields. It was in the interests of the community to maintain the balance between the means of subsistence. Accordingly, the management and supervision of the common lands was a matter for the community, which was organised into the 'mark'. In this organisation all the farmer-proprietors had a right to vote. The extent of the common lands was indicated by mark stones. The two map extracts show that the main outlines of the mark of Anloo are still visible in the landscape today. New elements, such as the provincial road, were incorporated into the existing pattern.

The mark organisation was abolished during the second half of the 19th century. Because of the introduction of artificial fertilisers and modern farming methods the waste lands were no longer needed for the pasturing of sheep. Although numerous changes have occurred during the course of the years, particularly in the last century, the main features of man's historical impress on the landscape are still visible.

Photograph VII – *Anloo, seen from the Gasteren-Anloo road.*



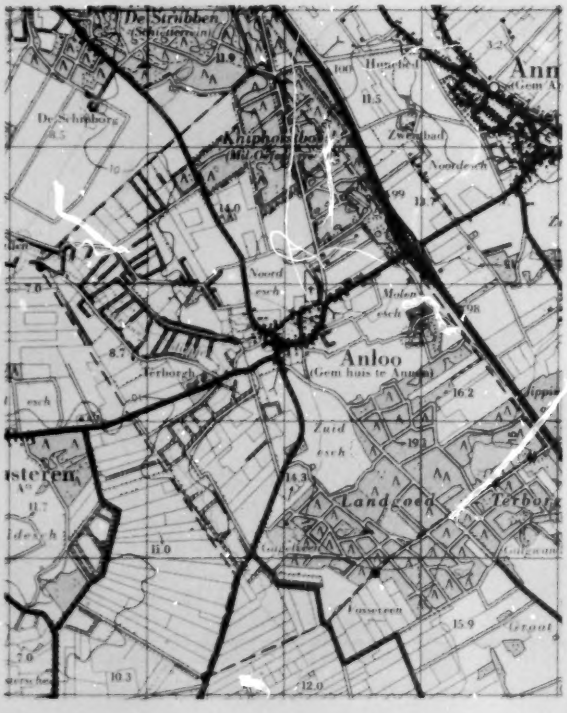


Fig. 12 – Topographic and Military Map 1853, sheet 12, and Topographical Map 1970, sheet 12-East, both at a scale 1 : 50,000.

--- mark boundary

• boundary stone

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Terps in Westergo

The area of Winsum and Oosterlittens forms part of the old saltmarsh landscape of Friesland and is considered on the basis of archaeological research to be one of the oldest inhabited parts of the coastal region of Friesland and Groningen. Several centuries before the Christian era, accreation in this saltmarsh zone had already proceeded so far that it was possible to live here safely. The first inhabitants lived in 'Flachsiedlungen' on the naturally formed level of the saltmarsh. Not until the post-Roman marine transgression phase from 300-800 A.D., with its repeated inundations, did the dwelling sites in this area have to be raised, with the consequent construction of terps (see fig. 11, p. 19).

Archaeological finds have shown that some of the first inhabitants came from the sandy areas situated farther inland. Some arable farming could be practised in the higher parts of the district, while there was an abundance of grassland for livestock farming.

The villages were built on the highest parts of the area. These were the raised banks which had been formed when the region came into being. Moreover, a location was sought near water, because the system of tidal channels formed an excellent means of transport. Up to the end of the last century, when the railways were constructed, the waterways remained the most important means of transport for people and goods.

From the end of the tenth century, when it became possible to build effective sea defences, the terp villages became relict settlements, yet many of them have survived up to the present day. The farmsteads are generally situated along the edges of the terp, which ensures good access to their fields. The farmland extends out radially, or in irregularly-shaped blocks, from the terp.

Particularly after the post-Roman marine transgressions, when heavy clays, deficient in lime, were deposited over the area, the emphasis came to be placed on livestock farming. The production surplusses which then arose were rapidly disposed of through an intensive trade along the North Sea and Baltic coasts. Through this trade the terp region acquired a large measure of economic independence, so that feudalism had little chance to gain a footing, although influential farming dynasties arose, who developed into a pseudo-aristocracy and built fortified dwellings as a sign of their prosperity. Doniastate, southwest of Winsum, is an example of this.

Photograph VIII – Vertical aerial photograph of the Frisian grassland region, with the villages of Winssum (top left) and Oosterlittens (bottom right); scale c. 1 : 12,650.

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The heavy sticky clay proved to be suitable for the manufacture of bricks and numerous brick-works were opened in the sticky clay region. The Topographical and Military Map (TMK) of 1853 shows a tileworks south of Winsum and another northeast of Memerd. Because of economies of scale this industry has declined during the present century. Modern processing methods in agriculture are one of the reasons why a creamery was opened in Oosterlittens, while in Winsum a local smithy expanded into a factory for the large-scale production of agricultural machinery.

The original road pattern still betrays the function it served during the opening up of the farmland. The roads adapt themselves to the field pattern and wind in an erratic fashion through the area.

The provincial road from Leeuwarden to Bolsward has been constructed to carry modern traffic. This supra-local element could not be fitted into the original pattern.

Photograph IX — *Entrance to the village of Oosterlittens, with the place name in the Frisian language.*

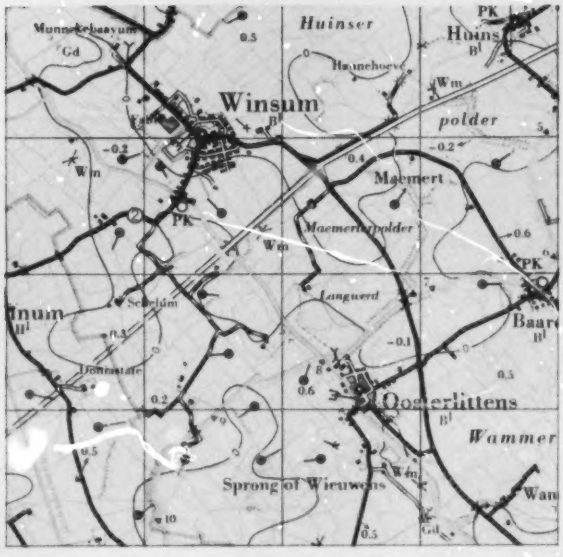

Fig. 13 – Topographic and Military Map 1853, sheet 10, and Topographical Map 1973, sheet 10-East, both at a scale 1 :50,000.

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I.3.4. Kiel-Windeweer and Oude Pekela – two villages in the Peat Colonies

Kiel-Windeweer: During the 17th century there began a large-scale and systematic reclamation of the peat bogs of East Groningen. In order to be able to penetrate into the peat bogs drainage is a first essential. The area was opened up by means of a canal, from which branches were dug along which the bordering peat could be dug and carried away.

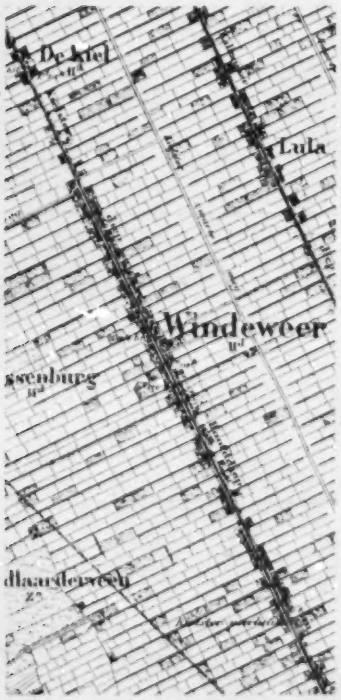
The reclamation of Kiel-Windeweer began in 1637 with the construction of the canal known as the Kieldiep. Because the area slopes down from south to north, the canals lead in a northward direction.

Kiel-Windeweer is a canal peat colony, consisting of a main canal with branches at right angles. A road has been constructed alongside the main canal and the village has grown up along the road. On the other side of the canal is an unmade footpath and most of the buildings are farms. The branch canals are at intervals of 160-200 metres and extend back into the bog from the main canal. Between two branch canals there is space for two farms, which can both ship their produce directly from the land by way of the branch and main canals. The Peat Colony villages are thus accessible by navigable waterway. The farm parcels extend back to the boundary of the neighbouring municipality or concession.

After reclamation the area was prepared for agriculture. Because the reclaimed land had a good soil structure, but was lacking in natural nutrients, the peat barges brought urban refuse as a return cargo for spreading on the fields. When a reorientation from water to road transport took place after the Second World War, access to the Peat Colonies, with their ribbon development and numerous light bridges, became inadequate.

Branch canals were filled in to make wider parcels and bypasses were constructed parallel to the village streets to relieve the traffic pressure on the villages. In spite of all these developments, Kiel-Windeweer retained its original character as an agricultural peat colony.

Photograph X – *The elongated village of Kiel-Windeweer, built along the Kieldiep.*



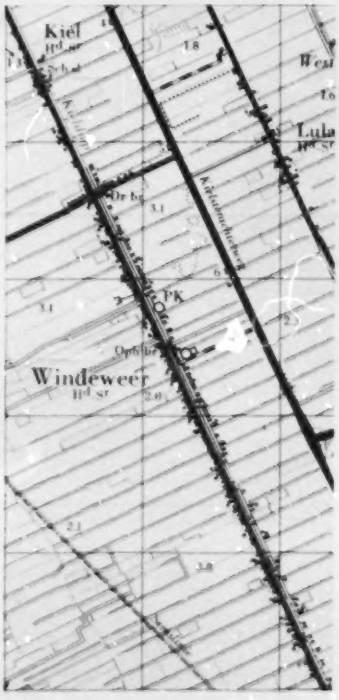


Fig. 14a – Topographic and Military Map 1853, sheet 12, and Topographical Map 1970, sheet 12-East, both at a scale 1 : 50,000.

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Photograph XI – *Strawboard factories along the Pekeler Hoofddiep in Oude Pekela.*

Oude Pekela: Here, too, reclamation began in the early 17th century (1608). The axis of occupation was formed by a small bog stream, the Pekel A, from which the main canal in Oude Pekela derived its winding course. In order to avoid problems and particularly to ensure satisfactory drainage, in view of the natural gradient, the parcels on the south-east side of the Pekeler Hoofddiep (main canal) had to be laid out at an angle.

Originally, an agricultural peat colony was developed here, too. Because the transport chain of peat export and manure import was interrupted in the peat colonies, this region was especially favourable for the maintenance and repair of barges, and a ship-building industry soon also developed, first for the construction of inland ships and later when trading relations began to extend over the Wadden, North and Baltic Seas, for sea-going ships. As a consequence of this development the topographical map of 1853 shows numerous shipyards in Pekela. At the end of the 19th century the strawboard industry was added to the existing industries. The raw material came mainly from the Oldambt (where the water is too brackish to be used for processing) and later also from the Peat Colonies when the pattern of arable farming there (grain and potatoes) came to its full development. Because Pekela possesses sufficient fresh water for processing and has a long transport tradition, strawboard manufacture developed here and so Pekela was transformed from an agricultural into an industrial peat colony.

After the Second World War the strawboard industry experienced radical changes: from being highly labour-intensive it became labour-extensive. Moreover, there were numerous mergers, so that the unemployment rate of this region became the highest in the country. Instead of straw, wastepaper is now used, which enables more modern machines with a much higher production capacity to be employed. These industries originally discharged their effluent into the canals, so that the area was pervaded by a strong smell of hydrogen sulphide. Nowadays the effluent is partly recycled and partly discharged to the Dollard by a deep pipeline. The industrial development has led to a greater population concentration and to some nucleation in the village of Oude Pekela.

In Oude Pekela, too, the rise in motor traffic has led to the construction of a number of roads parallel to the village axis, except that they have been built too close to the original development, which not only causes noise nuisance, but has created parcels of farmland that are too small to be used economically.

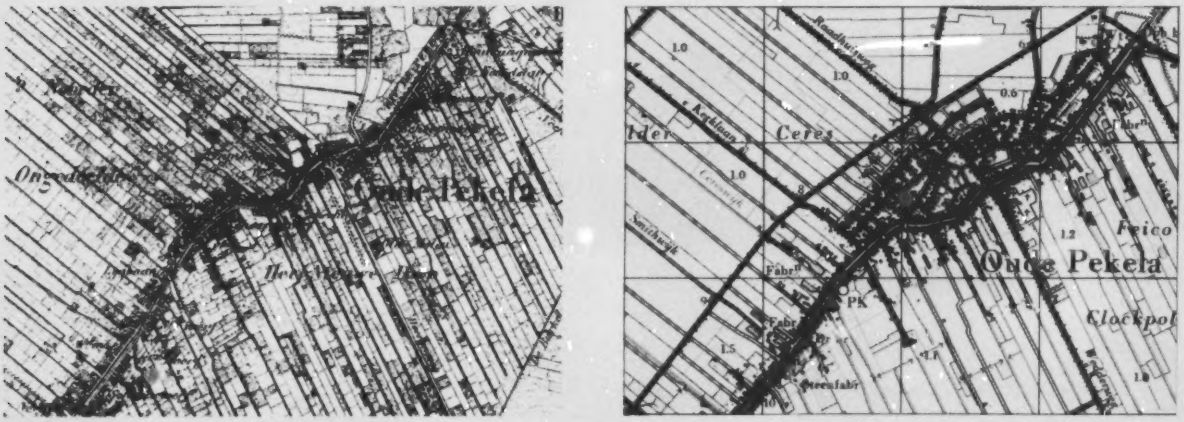

Fig. 14b – Topographic and Military Map 1853, sheet 13, and Topographical Map 1971, sheet 13, both at a scale 1 : 50,000.

I.4. Socio-economic development

I.4.1. The North as a problem region

In the years following the Second World War, the share of agriculture in total employment declined in the Netherlands, as it did in most West European countries, as a result of mechanisation and economies of scale, while the number of jobs in industry and, particularly, in construction and services increased rapidly.

An important cause of the problems which thus arose especially in the Northern Netherlands, was the relatively large role played by the agricultural sector in these provinces, so that the exodus from agriculture was felt more strongly here (Table 3).

Table 3 – Percentage of the Economically Active Population engaged in Agriculture in the Northern Netherlands as compared with the Whole of the Netherlands, 1950 and 1975.

	Northern Netherlands	Netherlands
1950	27.4	15.8
1975	10.9	6.2

For the many people for whom there was no longer a place in agriculture it proved difficult to find work in other sectors in the Northern Netherlands. Secondary industry and, particularly, primary industry at the national level had long been concentrated in the western coastal provinces and new establishments were attracted to regions with a good infrastructure and large population concentrations. The relatively thinly populated North, with only one city of more than 100,000 inhabitants (Groningen) and a poorly developed transport network and port capacity in comparison with the Randstad, had little to offer in this respect. The industry traditionally to be found in the North is based mainly on the processing of local raw materials, predominantly agricultural, and therefore has little potential for expansion.

A further factor militating against the North is its nationally and internationally marginal location. As far as distances to the large cities and to the port and industrial concentrations in the west of the country are concerned, the northern provinces occupy a position comparable with that of the south of the province of Limburg (see fig. 15 and the leading article in the IDG Bulletin, 1981-82). But the great difference is that South Limburg, although lying in the remote southeast of the Netherlands, is closely surrounded by major population concentrations in Belgium and West Germany, while the Northern Netherlands borders on an equally thinly-populated and economically-backward part of the Federal Republic, where, moreover, the most important transport links are orientated north-south (compare in fig. 16 the position of Groningen (G) with that of Maastricht (M) in South Limburg). *)

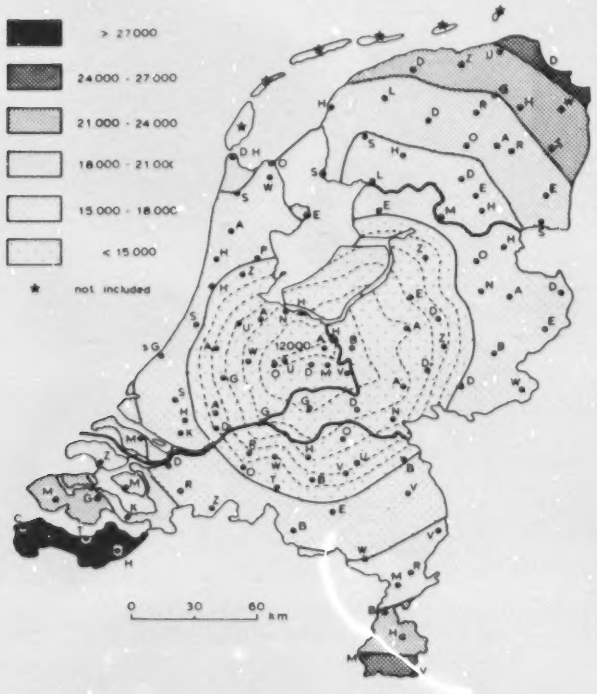

Fig. 15 – Isolines of Accessibility by Road, 1971. GIRUG '72
The lines connect the points where the sum of the distances in kilometres to all the 118 places shown (measured along the shortest route) is the same.

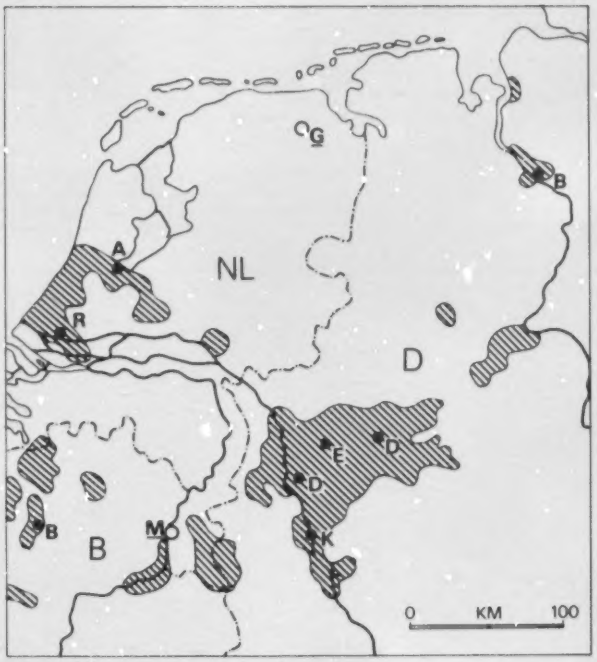

Fig. 16 – Comparison of the relative locations of Groningen and Maastricht.

*) The map of isolines also brings out the unfavourable location of the south of the province of Zeeland (Zeeland Flanders), which cannot be reached overland within the Netherlands. But here, too, the situation differs from the North, because Zeeland Flanders is situated along the navigable channel to Antwerp and is bisected by the ship canal to Ghent. Moreover, cities such as Ghent, Antwerp and Brussels are situated a short distance over the border.

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Many people therefore found themselves compelled to look for work in other parts of the Netherlands. During the 1950's, in particular, all three provinces suffered a large net inter-regional migration loss (see fig. 17). The migration flow was directed particularly towards the Randstad and the regional differences in population density were intensified. During the course of the 1950's and in the early 1960's, however, the situation improved. This was partly the result of a strong upturn in the national economy (the E.E.C. was established in 1958) and an increasing shortage of labour. The North still has relatively the largest labour supply and the establishment of new industries was further encouraged here by the central government's regional policy (beginning in 1952, but with discernible results for the North from 1958; see Section I.4.2.).

The inter-regional migration loss declined (fig. 17) and, in 1962, Drenthe was the first of the three provinces to show a migration gain. Friesland followed in 1971 and Groningen in 1973. The latter province has also shown a modest gain for a few years during the 1960's. At the same moment, however, the migration gain had again begun to decline in Drenthe and Friesland. The economic recession which affected the whole of the western world from that moment left its deepest mark in the Northern Netherlands, as it did in all the economically weaker regions. The mechanism referred to earlier, which ensured that regions with an abundant labour supply attracted new economic activities, no longer operated when no new activities at all were undertaken. Many industries which had established themselves in the North during the preceding years had been attracted by the abundant supply of cheap, unskilled labour shed mainly by agriculture. These labour-intensive industries, which were, moreover, mainly branch plants of large undertakings elsewhere in the country (Philips, Akzo), proved to be very vulnerable when wages became uniform all over the country during the 1960's (and so were no longer relatively lower in the North) and also started to rise much more quickly than did labour productivity as a result of the labour shortage. It was these industries in particular which became the victims of the recession during the 1970's. Nor did the exploitation of minerals in the North result in spectacular industrial developments, although a few chemical concerns did establish themselves in Delfzijl (processing of natural gas and rock-salt), as well as an aluminium smelter, making use of electricity generated by natural gas, while in south-east Drenthe there is a pulverised carbon plant, based on the exploitation of peat. But the petroleum from south-east Drenthe was transported by rail to the refineries in the port of Rotterdam from the start. Moreover, the natural gas which has been produced in vast quantities since 1960 could have formed a more important stimulus for the North if the government had not immediately decided that the price of gas should be uniform throughout the country.

Because of all this unemployment in the three northern provinces has risen far above the national average (Table 4).

Table 4 – Unemployment in the three Northern provinces and in the Netherlands, in absolute figures and as a percentage of the employed economically active population (exc. self-employed), 1975, 1977, 1979, 1981 and 1983.

	Groningen		Friesland		Drenthe		Netherlands	
	abs.	%	abs.	%	abs.	%	abs.	%
1975	8.554	6,0	8.549	6,3	8.084	7,5	195.202	5,0
1977	9.900	6,9	8.680	6,2	7.743	7,1	203.527	5,1
1979	11.417	7,7	8.211	5,6	6.868	6,1	209.988	5,1
1981	19.476	12,5	17.521	11,3	13.069	11,0	385.291	9,0
1983 *	37.555	23,6	33.717	20,0	25.605	18,7	767.704	16,4

* figures at the end of March; the other figures are annual averages.
Source: Ministry of Employment and Social Security.

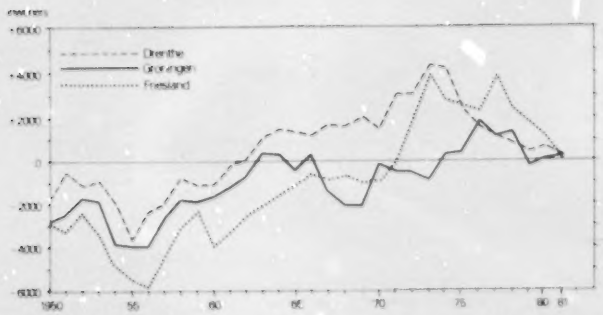

Fig. 17 – Internal migration gains and losses in the provinces of Drenthe, Groningen and Friesland between 1950 and 1981. (N.B. 'internal' here means migration between the provinces of the Netherlands)

Of the eleven Dutch provinces Groningen has the highest unemployment rate, while Friesland and Drenthe occupy the third and fifth places, respectively. It should be remarked, however, that, in absolute terms, unemployment in the North remains far below that in the West. In each of the provinces of North and South Holland the number of unemployed exceeds that in the three northern provinces combined. South Holland has nearly four times as many unemployed as Groningen. Because of the financial restrictions this is now resulting in a change in emphasis in the fight against unemployment at the expense of the North (see paragraph II.3. and fig. 25, p. 44).

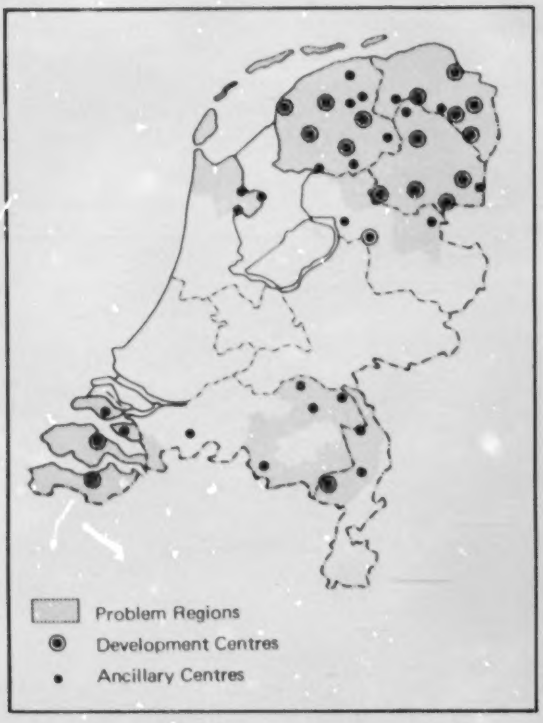

Fig. 18 – Regional Policy in 1959.

I.4.2. The regional development policy

At the beginning of the 1950's the Dutch government began to follow a socio-economic policy that was concentrated on regions with an unemployment rate higher than the national average. The policy was aimed, among other things, at improving infrastructure and the level of vocational training. In addition, a number of places were designated as development centres, while financial incentives were given to people who moved from the 'problem regions' (see fig. 18) to other regions. This latter measure was abolished in 1958 not only because of the still increasing population pressure on the western coastal provinces, but also because of the unfavourable selective aspects of migration for the regions from which the migrants originated. At the same time a distinction was made between primary and secondary development centres, based on the idea that it is easier to stimulate economic development in a few centres of relatively large size than in a large number of small centres.

Fresh changes occurred at the beginning of the 1970's. Because it was becoming clear that the problems of the traditional, labour-intensive industries are insoluble, government subsidies began to be directed more towards **capital-intensive** enterprises. The government also tried to increase the share of the problem regions in employment in the services sector, which was logical in a country where some two thirds of the economically active population is employed in that sector. It considered that it has a useful instrument in the form of its own personnel policy.

Thus in 1972 an ambitious plan was drawn up. By September 1978, a number of government departments were to be removed to the problem regions, as a result of which about 6,500 civil servants were to leave The Hague (i.e. more than 10% of the officials employed there), of whom 3,000 were to move to Groningen and 1,200 to Friesland and Drenthe. A number of departments have indeed moved, but the results have fallen short of expectations. Among the reasons are the high costs, the serious objections of many civil servants to compulsory removal and, in recent years, the protests of the municipal council of The Hague and the provincial government of South Holland, who point out that unemployment is increasing more rapidly in The Hague and its environs than in the peripheral regions of the country.

Two other projects were launched in the same year (1972). One of these was a plan for the reconstruction of the Peat Colonies and the other the intention to publish within a few years an 'Integral Structure Plan for the North of the Country' (ISP). This latter ambitious document was not published until 1979. Besides proposals in the socio-economic sphere, it contained (in accordance with its title), ideas about the development of education, recreation etc., all resulting from the activities of a number of working parties, consisting of central and local government officials.

The main objectives of the socio-economic policy set out in the ISP are the following:

- reduction of the discrepancy in income between the north and the national average, although account has to be taken here of the generally lower cost of living in the North (lower rents etc.) and of 'invisible income' in the form of accrued advantages such as more fresh air, recreational space, peace and quiet etc.

- reduction of the regional component in the structural unemployment of the North (= the difference between the unemployment rates for the North and for the country as a whole).

The Northern Development Company (NOM) was established in 1974. This is a limited company (NV), the shares of which are held by the State. The activities of the NOM are directed in the first place towards financial participation in new or existing enterprises and the granting of State-guaranteed loans, as well as towards publicity and encouraging employers at home and abroad to move to the northern provinces.

Despite all these developments, both the present situation and the prospects for the North in the near future are far from rosy. Consequently, the trade unions have recently urged the government to carry out special investments projects in the North, such as the construction of roads and railways, the building of a park for wind energy and an accelerated reinforcement of the sea dikes. In fact, however, the government's regional socio-economic policy has been increasingly abandoned and replaced by national

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measures, to which, in certain circumstances, local or regional exceptions can be made, or to which a special interpretation can be given. Thus fig. 19 shows that the northern provinces, which are still regarded in their totality as a regional development area, contain 26 of the 42 places in the Netherlands which are eligible for investment grants.

I.4.3. Delfzijl: a development centre

Delfzijl is perhaps not the most typical example of the development centres in the northern provinces. Nor is it the one with the largest amount of employment in industry; in this respect it occupies sixth place (Table 5).

Table 5 – Employment in industry and in the industrial development centres in the Northern Netherlands, 1981.

Centre	Industrial employment	idem as % of the total for the Northern Netherlands
1. Groningen	8 831	12,9
2. Leeuwarden	7 490	11,0
3. Emmen	7 027	10,3
4. Hoogezand-Sappemeer	5 309	7,8
5. Hoogeveen	4 375	6,4
6. DELFZIJL	3 886	5,7
7. Drachten	3 262	4,7
8. Assen	3 163	4,6
remaining 19 centres	24 953	36,5
Total	68 296	100,0

Source: Statistical Digest for the North, 1982.

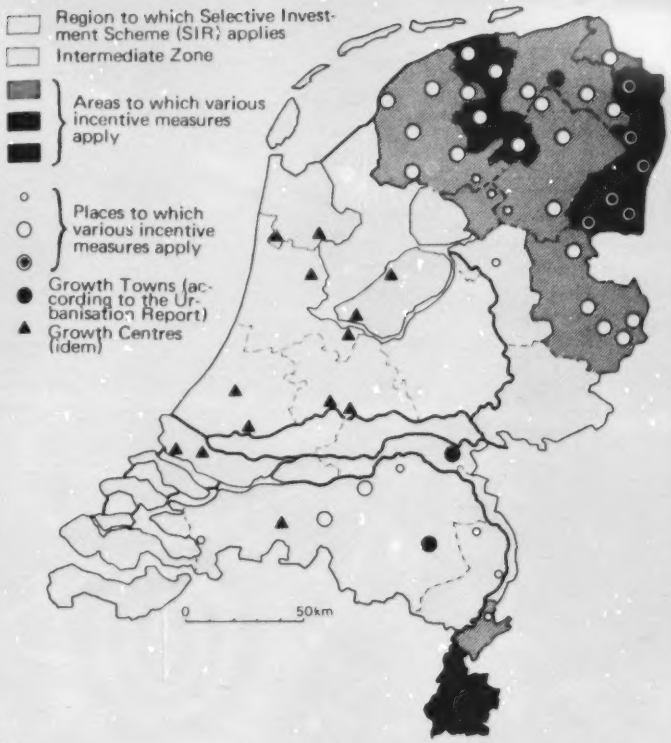
Region to which Selective Investment Scheme (SIR) applies
Intermediate Zone
Areas to which various incentive measures apply
Places to which various incentive measures apply
Growth Towns (according to the Urbanisation Report)
Growth Centres (idem)
0
50km

Fig. 19 – Regional Policy in 1981. Bron: Min. van Econ. Zaken

Delfzijl has nevertheless been chosen for this study, in the first place because of the interesting development of port-linked activities, which was successful at first, but later stagnated, particularly as far as the much-discussed Eemshaven project is concerned. Delfzijl is also of interest in connection with the role which it was originally to fulfil in relieving the ports of Rotterdam and Amsterdam. Although there is no longer the same need as was anticipated in the 1960's, the Delfzijl-Eemshaven zone has nevertheless been included among the six Dutch port zones where port developments up to the year 2000 can be accommodated (Structure Scheme for Seaports, 1981; see IDG Bulletin, 1981-82, pp. 50-51).

Around 1300 a lock or 'zijl' was constructed in the mouth of the little river the Delf (now the Damsterdiep). Trade could be carried on there with the ships which had to wait to enter the lock and from these activities arose the settlement of Delfzijl. For centuries its existence was based on coastal trade and fishing.

Its development potential was enlarged at the end of the 19th century when it obtained within ten years both better water and land connections with the city of Groningen and the rest of the Netherlands. The Eems Canal was completed in 1876 and the rail link in 1884 (fig. 20).

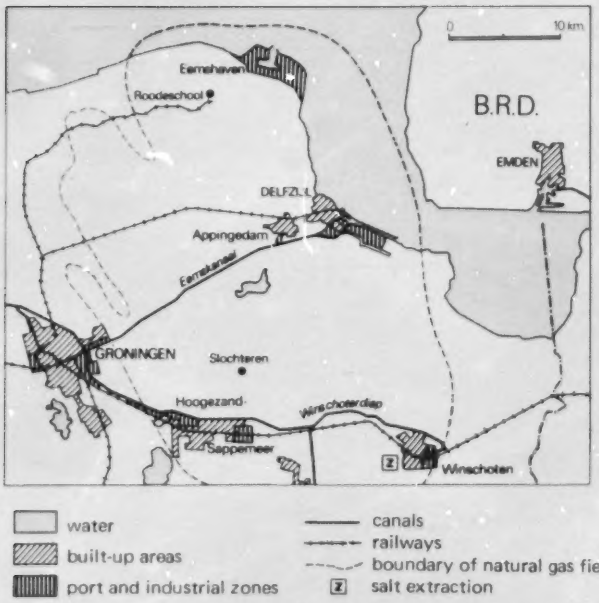

Fig. 20 – Delfzijl and Environs.

Delfzijl nevertheless remained a relatively peaceful little port until the 1950's when two important minerals were discovered in the neighbourhood in quick succession. These were rock salt and natural gas. The salt was found near Winschoten in 1951 and Delfzijl was the obvious place for it to be processed into such materials as soda and chlorine (AKZO). An important location factor was that waste materials could be readily discharged into the sea via the Eems. The raw material is transported as brine along a 23 km pipeline.

In 1959 followed the sensational gas find near Slochteren. An important concern which established itself in Delfzijl as a consequence of that find was ALDEL (1966), which smelted aluminium from ore imported from overseas. There were originally 120 smelting furnaces and this number was later increased to 300. Advantage was taken of the relatively cheap electricity generated by natural gas supplied at an approximately 60% lower rate. This was a special measure introduced in 1963 to attract industries which did not yet exist in the Netherlands.

There now seemed to be nothing to prevent a vigorous development of Delfzijl.

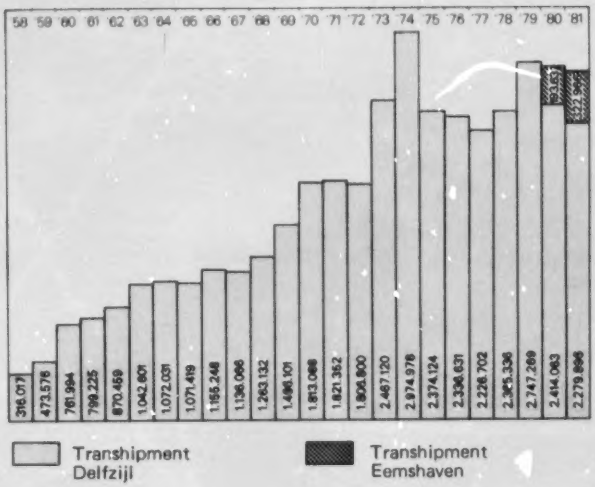

Fig. 21 – Transhipment of goods in Delfzijl and Eemshaven, 1958 to 1981, in tonnes.

Photograph XII – *Delfzijl and its environs, looking north west. 1 = Delfzijl with the old harbour, 2 = Eemshaven, 3 = part of the entrance to the new port, 4 = site of the former village of Oterdum, 5 = Delfzijl Aluminium Smelter, 6 = AKZO Chemical Works.*

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As well as the favourably developing economic situation, there was the stimulus of government policy. In 1959 Delfzijl was designated as one of the fifteen 'large' development centres within the context of the regional development policy for the North (cf. p. 30). Moreover, the view gained ground during the 1960's that the further development of port and industrial activities in Rotterdam and Amsterdam should be curbed in order to prevent further congestion and problems of environmental management in the west of the country. New port-related activities should be diverted to other regions, particularly the South West (Western Scheldt) and the North.

In 1958 the management of port and industrial sites in Delzijl was taken over by a 'Havenschap' (port authority), in which the State held a 50% share, the province 30% and the municipality of Delfzijl 20%. During the next fifteen years the new inner harbour was extended to the east and the 'seaport canal' was dug. The area of industrial land was increased from 100 to 1,400 hectares and a new harbour entrance was constructed, which is accessible to ships of up to 25,000 tons deadweight (photo XII). The annual volume of cargo loaded and discharged increased ten times during that period to three million tons (fig. 21), while the population of Delfzijl nearly doubled, from just over 12 500 in 1958 to 22,800 in 1973 and 25,400 in 1982.

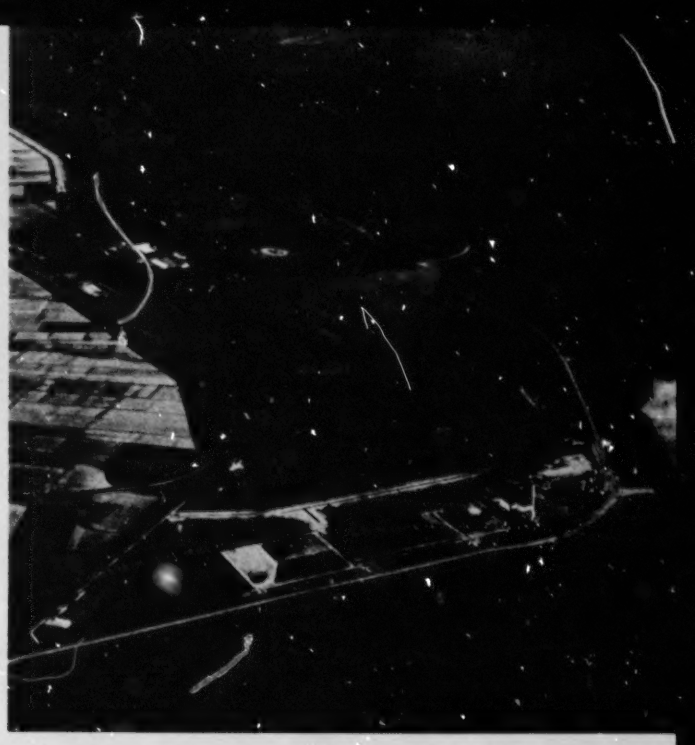
During these years the need was also increasingly felt for a port that would be accessible to considerably larger ships and so plans were prepared for the construction of the **Eemshaven**, situated about fifteen kilometres north of Delfzijl. The plans were worked out and realised remarkably quickly. Construction began in 1970 and the first stage of the complex, accessible to ships with a draught of 13 metres and a carrying capacity of 70,000 tons deadweight came into use in 1973.

Eemshaven was planned primarily as an **industrial port**, with the following important location factors:

- accessibility to medium-sized ships;
- the short supply lines for products from Scandinavia, such as timber,
- more scope than in the western Netherlands for the discharge of waste materials and gases;
- the presence of a larger labour supply.

In the first instance 600 hectares of industrial sites were laid out around the 200 hectares of port basins. As photo XIII, taken in April 1982, shows, the industries are not yet forthcoming. Apart from an electricity generating station, fuelled by natural gas, with a provisional capacity of 600 M., and a few transit businesses, the site is still unused. The prospects are not very encouraging in view of the following factors:

- the change in mentality from about 1972, which first manifested itself among pressure groups and has now, through certain political parties, affected politicians at the national, provincial and municipal level, resulting in an increasing scepticism towards the desirability of economic growth and a growing awareness of the need



Photograph XIII — *Eemshaven, looking north west, in the foreground the power station.*

Photograph XIV — *Opening of the Eemshaven in 1973: celebration and protest. Text on the banner: 'Petrochemical industry poisons the Wadden Sea!'*

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to protect the environment. Even in official reports and statements the feeling can be detected that the North has no need of a second 'Europoort', with all its attendant congestion and environmental problems (photo XIV);

- as a result of the economic crisis of the past ten years most of the growth expectations of the 1960's have not been realised;

- quite apart from the recession, the prospects for a large-scale port and industrial development in the north-east Netherlands do not appear very good. The region lies outside the major North Sea shipping routes and, in comparison with Rotterdam and Amsterdam, has considerably less favourable connections with the hinterland in the Netherlands and West Germany;

- the argument that a successful development of the Eemshaven project and its accompanying industries would be helped by and, in its turn, have a favourable affect on the high unemployment rate in Groningen has proved in part to be wrong in view of the capital-intensive nature of the industries which it is mainly hoped to attract.

One of the few bright spots for future development is the industry related to offshore activities: the exploration, exploitation and transport of North Sea oil and gas.

There has already existed for some years in Delfzijl a firm which coats the pipes for bringing the oil and gas ashore with a mixture of concrete and iron filings. The Netherlands Petroleum Company (NAM) also hopes to build a separation plant for North Sea oil and gas in the Eemshaven.

Latest news

At the beginning of July, 1983 the government announced the following decisions with reference to the North:

- the extra support for the North will be continued after 1985 if the unemployment rate there is higher than the national average;

- the French oil company, Petroland is to be granted permission, under very stringent conditions, to drill for natural gas in the western section of the Wadden Sea. (The Association for the Conservation of the Wadden Sea has protested strongly against this).

- the plans for reclamation of an area of saltmarsh along the coast of Friesland are not to be carried out for the present;

- the fishing port of Lauwersoog is to be enlarged *

- the decentralisation of government departments to the North will be continued.

* one of the reasons for this is to make it more attractive for German and Danish fishermen to sell their catches through the fish auction in Lauwersoog.

I.5. An excursion route

The excursion route described below and illustrated in fig. 22 (pp. 36/37) passes most of the places referred to in the preceding sections. The route (from Coevorden to Lemmer) is about 375 km long and is hardly suitable for covering in a single day. With the aid of the maps listed below the user can fit parts of the route into his or her own itinerary and add to or change the route. The roads mentioned in the itinerary are all usable by coaches. The figures in the description correspond with those in fig. 22.

Maps:

- Michelin map no. 408, 'The Netherlands', 1 : 400,000

- ANWB motoring map 'Noord-Nederland', 1 : 200,000 (used as the base for fig. 22)

- ANWB tourist maps, 1 : 100,000:
  - no. 2 – Friesland (west and centre) and North East Polder
  - no. 3 – Groningen and Drenthe (north)
  - no. 4 – Drenthe (centre and south)

In the itinerary it is assumed that the reader starts by entering south-east Drenthe from Zwolle via Ommen.

1 – **Coevorden** is one of the old fortified towns which formerly secured the few roads passing through the peat bogs to and from the Drenthe plateau.

From Coevorden follow strictly the signs to Schoonebeek.

2 – **Schoonebeek** –
between Coevorden and Schoonebeek one sees to the left and right of the road the 'donkey droppers' (pumps; photo XV) and other installations for extracting oil in the Netherlands' oldest oilfield (oil was found in 1943 and the concession granted in 1948).
No less than 580 wells have been sunk, about half of which are still producing oil. Recently efforts have been made to increase production by the injection of steam. The Schoonebeek field is responsible for over 60% of Dutch oil production, which covers about 4% of domestic needs.

In Nieuw-Schoonbeek turn left at the church towards Weiteveen, where turn left and then right again after 2 kilometres to Klazienaveen.

3 – Here one is passing through the raised bog region of south-east Drenthe. Peat is still being removed in a few places (e.g. 1½ km beyond Weiteveen, to the right of the road). Elsewhere one sees arable farms on the 'dal' soils (cf. p. 18/19).

In Klazienaveen turn left at the traffic lights, towards Erica, and at Erica right towards Emmen.

Klazienaveen has a factory which produces pulverised carbon from peat. Between Klazienaveen and Erica the road follows the 'Verlengde Hoogeveense Vaart' (Extended Hoogeveen Canal), one of the numerous straight canals which are so characteristic of the peat colonies.

In Emmen follow strictly the signs for Groningen and Assen.

4 – The route passes through the western part of Emmen, a town which has grown rapidly, mainly as a result of the government measures during the 1960's. Between 1960 and 1970 the number of jobs in manufacturing more than doubled (from nearly 4,800 to over 10,300, thanks mainly to the development of labour-intensive industries); afterwards, a rapid decline set in. The largest industrial estate is situated on the south side of Emmen, partly along the road by which one enters the town.

After Emmen continue towards Assen and Groningen, i.e. follow the main N34 road.

5 – This road passes over the Hondsrug, the high eastern rim of the Drenthe plateau. The landscape is very different from that in the peat region of south-east Drenthe. The terrain is somewhat accidented, rectangularity is absent in this much older landscape and the arable land – on reclaimed heaths – alternates with large areas of woodland. Tourism forms an important source of income in villages such as Odoorn – with handsome restored farms – and Borger, in the neighbourhood of which are several megalithic tombs (see the ANWB maps).

Nine kilometres beyond Borger turn left at the traffic lights for Eext and Anderen, then take the first road to the right to Eext, then turn left to Anderen. In Anderen turn right to Gasteren and from there right to Anloo and Annen.

Photograph XV – *Raising oil, with the help of a 'donkey dropper', in south-east Drenthe.*

6 – Beteen Eext and Anderen one is again traveling through arable fields on reclaimed heathland. Farmsteads are absent in the countryside; they are situated in the green villages such as Anderen, grouped in a picturesque manner on and around the green.
Between Anderen and Gasteren the route runs through the attractive stream valley landscape of the Drenthe Aa, an area that is now protected because of its great landscape and natural history value.
Near Gasteren one can see well the difference between the high arable lands on the open fields (right) and the low-lying pasture land in the stream valley (left).
Anloo is the green village which was discussed as a case study on pp. 22/23.

In Annen turn left for Zuidlaren, then right towards Hoogezand.

7 – The village of Zuidlaren is famous for its horse fair, which is more than 750 years old. It dates from the time when the farmers from over a wide area sold their unwanted horses in the autumn. The fair is held every October on the very spacious green in the centre of the village. North of the village is the Zuidlaren lake, which is now an important centre for water sports.

Three kilometres beyond Zuidlaren, at the end of the hamlet of De Groeve, turn right towards Veendam. At the village of Kiel-Windeweer turn right immediately after a bend in the road and drive south along the right-hand side of the canal.

Fig. 22 – Excursion route.

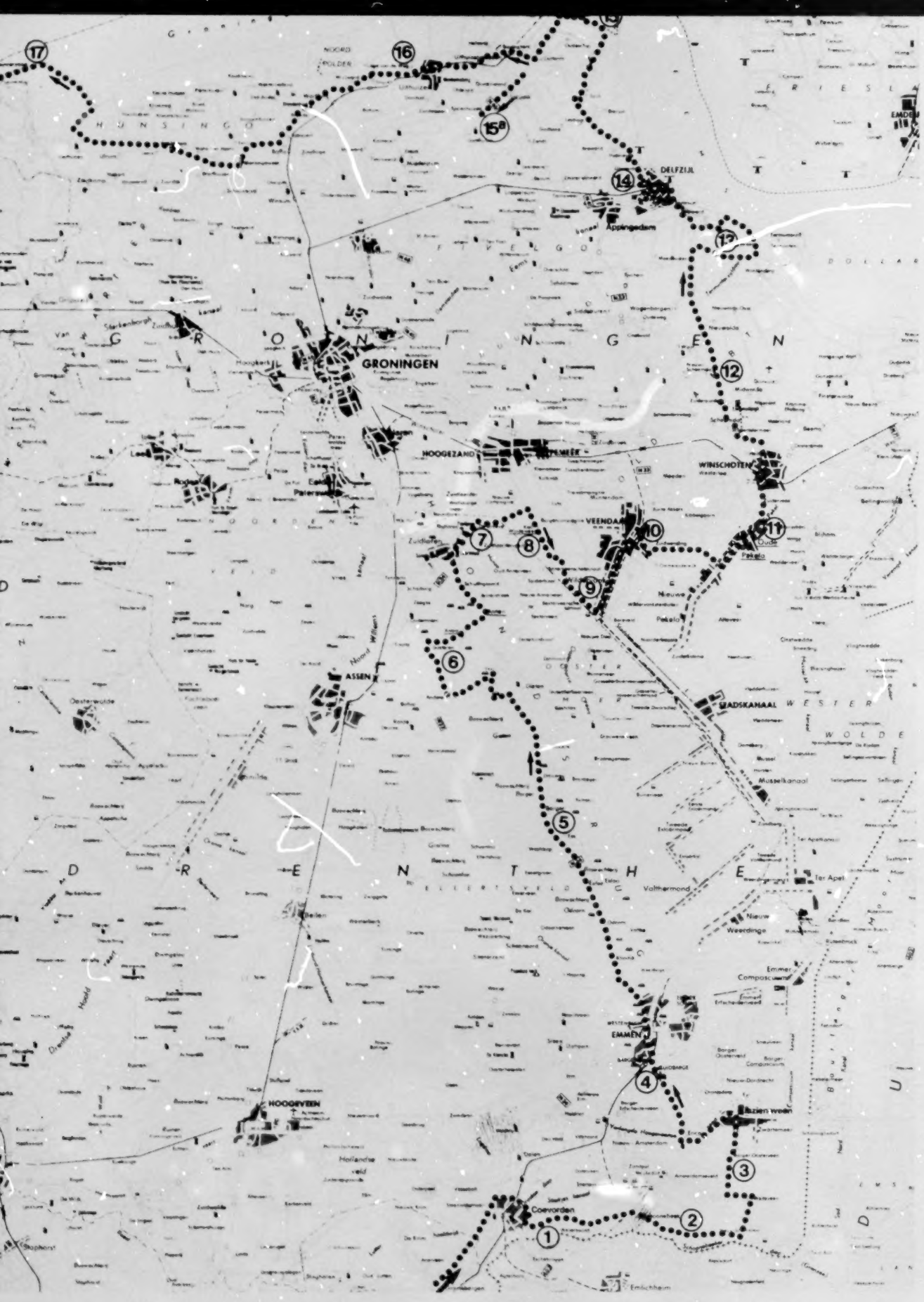
GRONINGEN
DRENTHE
HUNSINGO
OOSTERSCHELDE
DELFZIJL
HOOGEZAND
SLOCHTEREN
WINSCHOTEN
VEENDAAM
ASSEN
MADSKANAAL
Ter Apel
EMMEN
HOOGEVEEN
Coevorden
Emlichheim
Nieuw Weerdinge
Valthermond
Musselkanaal
Pekela
Oude Pekela
Nieuwe Pekela
Noord Willemskanaal
Hollandse veld
Dwarsdiep
Hoofdvaart
Borger
Odoorn
Exloërveen
Nieuw Dordrecht
Emmer Compascuum
Barger Compascuum
Barger Oosterveld
Nieuw Amsterdam
Klazienaveen
Zuidbroek
Appingedam
Farmsum
Eemshaven
Nieuwe Statenzijl
Oude Statenzijl
Termunterzijl
Termunterzijldiep
Nieuwe Pekelaarsdiep
Oude Pekelaarsdiep
Boven Hoogeveen
Nieuw Amsterdam
Nieuw Dordrecht
Nieuw Weerdinge
Valthermond
Ter Apel

Fig. 23 – Detail of the Excursion Route: Delfzijl and environs.

8 – Kiel-Windeweer is a good example of a village in the peat colonies, situated along a very straight canal, to the left and right of which, immediately behind the houses, is the arable land on the former raised bog, which has been transformed into 'dal' land (cf. p. 18/19 and the case study on p. 26).

Nearly at the end of the village, by a bridge with a red and white barrier, turn left and then right towards Ter Apel at the next crossroads. After about five kilometres turn left towards Wildervank and Veendam.

9 – Between Kiel-Windeweer and Wildervank one sees for the first time the installations for the recovery of natural gas in the Groningen gasfield. The gas was discovered near Slochteren in 1959 and now there are nearly 300 production wells in one of the largest natural gas fields in the world.

10 – Wildervank is another peat colony village, several kilometres in length, that passes without interruption into Veendam.
Veendam was the place where the characteristic potato flour processing industry of the peat colonies first developed on a large scale and has since expanded into a many-sided chemical industry (cf. p. 21).

In Veendam turn right towards Oude and Nieuwe Pekela (indicated on the signposts as 'Pekela's'). After half a kilometre turn left and immediately right, through Zuidwending. At the end of this village cross the main road and, after half a kilometre, turn left for Oude Pekela.

11 – Zuidwending is a peat colony where the canal was filled in within the framework of a land consolidation scheme, so that a broad road now runs through the village.
Oude Pekela is not situated on a straight canal, but on a meandering bog stream (the Pekel A). Here is to be found the largest concentration of strawboard factories, the names of some of which point to the great importance of exports to the British Isles (Albion, Brittannia).

Towards the northern end of the village of Oude Pekela, at the crossroad with STOP signs, turn left (past a water tower) towards Winschoten. In Winschoten follow the signs for Groningen and Delfzijl, then, after the bridge over the Winschoterdiep, turn left towards Groningen and, after 1 kilometre, turn right at traffic lights for Delfzijl.

12 – Winschoten is an old commercial centre, which was linked with Groningen by a canal in the 17th century and by a railway in 1868. Industry developed, including shipbuilding and, in the past decade, the town has become a centre for the exploitation of salt and natural gas.
Between Winschoten and Delfzijl one sees, besides the natural gas installations, the large arable farms of the Groningen Oldambt (marine clay region), often with large, handsome farmsteads.

Immediately before reaching the industrial zone of Delfzijl turn right in the direction of Termunten and

Photograph XVI – *Gravestones from the former village of Oterdum on the new seawall east of Delfzijl; in the background, the installations of the aluminium industry.*

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Photograph XVII – *Biessum, an old 'terp' (settlement mound) on the western fringe of Delfzijl.*

Woldendorp. After a bridge over a canal turn left towards Borgsmeer. In this small village turn right at a very handsome 'gentleman's farm' for Delfzijl and Termunten. Here one is following the foot of the sea dike along the Eems.

13 – After about 1½ kilometres one sees on the right a number of gravestones placed against the dike. These come from the churchyard of the village of Oterdum, that formerly stood here and has had to make way for the expansion of the port of Delfzijl (photo XVI). *

We recommend that you climb the dike here for the excellent view of the port and industrial areas of Delfzijl (left) and of Emden in the Federal Republic of Germany (across the water).

One then continues towards Delfzijl, passing right through the new port area with, among other things, the elongated building of the ALDEL aluminium works – with the small, seemingly misplaced terp village of Heveskes immediately behind it – and the AKZO plant.

As one enters Delfzijl one sees the new shipping lock in the entrance to the Eems Canal, which leads to Groningen.

Through Delfzijl follow the signs to Groningen (N41 road). About 1½ kilometres past the railway station turn left off this road towards Eemshaven (Fivellaan). After two more left turns (still driving towards Eemshaven) pass under the railway. Turn left at traffic lights towards Biessum and then proceed northwards along a winding road through the terp village of Uitwierde (keep left at the end of the village). Turn left on reaching the main road and then right towards Eemshaven at the village of Spijk.

14 – Biessum is a small terp village which now lies on the edge of the extended built-up area of Delfzijl. The 'collision' between these two completely different settlement patterns can be seen clearly on an aerial photograph or topographic map (photo XVII). Uitwierde, Holwierde and Spijk are terp villages.

* On the photograph of the port of Delfzijl on p. 27 of the IDG 'Pictorial Atlas of the Netherlands' this village is still visible in the foreground.

Photograph XVIII – *For the present there are more sheep than ships in the Eemshaven zone (the tanker in the photograph has been laid up).*

Where the road bends to the left on reaching the Eemshaven continue for a little over a kilometre and then take a road on the right leading into the still empty port and industrial site, eventually turning left to follow the foot of the dike. After about 1½ kilometres, immediately beyond a building materials site, there is a car park on the left and, on the right, some steps leading over the dike to a jetty for canal barges.

15 – From the top of the dike there is a good view of the port complex (see also p. 33 and photo XVIII).

A few hundred metres farther on turn left and immediately right and left again towards Groningen.

(15a) – N.B. – Anyone wishing to include a visit to the city of Groningen in the excursion can reach Groningen quickly by taking the N46 motorway from the Eemshaven. For information about the city, which could not be dealt with in this Bulletin, we refer to the addresses cited at the end of this article (p. 42).
In order to pick the excursion route up again as described one can drive from Groningen to Winsum via Sauwerd and turn left after Winsum for Mensingeweerd.

More than two kilometres after leaving the Eemshaven follow the signs for Roodeschool and then continue through this village and past Uithuizen, Usquert and Warffum to Baflo.

16 – Between Roodeschool and Warffum this road follows a former coastline; the whole of the roughly four kilometre-wide strip of land to the north of the road has been reclaimed from the Wadden Sea during the past few centuries.

In Baflo turn right for Eenrum and then continue towards Lauwersoog.

17 – Past the village of Ulrum, after the road has first turned sharply to the right and then, two kilometres later, sharply to the left, it runs along the foot of the dike by which the Lauwers Sea was sealed off from the Wadden Sea in 1969. The Lauwers Sea was a large coastal inlet covering nearly 100 km^2, which originated around 1100 as a result of storm surges. In 1960 it was decided to seal off and reclaim the inlet, partly in order to reduce the danger of flooding along the more than thirty kilometre-long coastline and also in order to improve water management in large areas of Friesland and Groningen. At the recreational park of Lauwersoog are to be found, among other things, a new fishing harbour and a new ferry port (for the boat to Schiermonnikoog), a complex of discharge sluices and a shipping lock.
From here, by following the multi-coloured round signs reading 'Expozee', one reaches a permanent exhibition about the Wadden Sea and Lauwers Sea etc. (admission price 2 guilders; for further information, see p. 52). In the vicinity of the exhibition building there are some holiday homes, a camp site and a few bathing beaches.
Because the water is kept at about 80 cm below its former level, 80% of the area of the Lauwers Sea has fallen dry. The remaining 20 km^2, now called the Lauwersmeer (Lauwers Lake), form an important nature and water sport area. Large areas of woodland have been planted around Lauwersoog. The remaining land is used partly for agriculture and partly for military training.

From Lauwersoog follow the road to Dokkum, from where turn right for Holwerd.

18 – Immediately beyond the crossroads near the village of Metslawier, to the left of the road, there is a good view of the small terp village of Jouswier (see the cover photograph). Dokkum, known in the history of Christianity as the place where the missionary, St. Boniface, was murdered in 754, is one of the eleven towns of Friesland and the most northerly town in the Netherlands. It was once a seaport and the seat of the Admiralty of Friesland before the Dokkumer Ee, which entered the Lauwers Sea, silted up in the 18th century.
Between Dokkum and Holwerd the road passes over the village terps of Foudgum, Brantgum and Waaxens. Each time the road rises somewhat on entering the village and descends again slightly on leaving it.

(18a) – In Holwerd one can drive down from the dike to the jetty for the boat to Ameland, either in order to visit that Frisian island (see p. 15/17), or in order to obtain a view from the dike of the coastal saltmarshes and the Wadden Sea.

From Holwerd the excursion route passes through the villages of Blija, Ferwerd, Marrum and Hallum to Stiens.

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19 – This road follows an old sea dike (for the first part the present sea dike is clearly visible at some distance to the north of the road) and the villages here are accordingly not terp villages, but dike villages. It is recommended that you drive through the village of Stiens, with its twelfth century church, surrounded by tall trees and with a typical Frisian 'saddleback' tower, and, in the vicinity of the main road, a windmill restored in 1978.

Follow the main road to Leeuwarden and, on arriving there, turn right towards Harlingen. After four kilometres turn left at Marssum for Bolsward.

20 – The road past Stiens to Leeuwarden follows the line of the eastern dike of the former Frisian Middle Sea, a deep inlet which extended into the heart of Friesland in the Middle Ages and, at a still earlier epoch, was even connected with the Zuyder Zee, so that the north-western part of the province of Friesland was an island. In the succeeding centuries the Middle Sea was partly reclaimed (cf. fig. 5 on p. 10). Leeuwarden, the capital of Friesland, was once situated on the coast of this marine inlet. The road between Leeuwarden and Marssum runs across the flat 'floor' of the Middle Sea, on which, to the north of this road, is situated the military airfield of Leeuwarden.

From the turn-off at Marssum first take the main road towards Bolsward and then, after three kilometres, the byroad through the villages of Boksum, Jellum and Weidum, then turn right to Mantgum and Baard and, finally, to Winsum.

21 – From Marssum to beyond Weidum this road follows the western dike of the Middle Sea. Both on the map and in the landscape one can see clearly that, even today, there are no villages situated on the floor of the former Middle Sea; they are all to be found to the west of the dike. Here there are a number of still relatively unspoiled terp villages, so characteristic of the Frisian landscape.

22 – They include the villages of **Winsum** and **Oosterlittens**, which were described as examples on p. 24/25.

Whether stopping at these villages or not, rejoin the main road to Bolsward.

23– Bolsward too is one of the eleven towns of Friesland and, if time permits, well worth a visit (15th century church, 17th century town hall, bulwarks etc.).

From Bolsward follow the main road southwards past Workum. Three kilometres beyond Workum the route map shows a turning to Hindeloopen. Visitors to Hindeloopen by bus will have to return along the same road, but thos going by car will be able to continue through the small town and along the foot of the Zuyder Zee dike, then turning off left through the small village of Molkwar to Koudum.

Photograph XIX – *Bilingualism in Friesland: place names in Dutch and Frisian.*

24 – Hindeloopen is one of the most picturesque of the eleven towns of Friesland. It was formerly a prosperous port and Hansa town and is now important, **inter alia**, as a water sports centre.

Back on the main road follow the signs for Balk and Lemmer. Rather more than three kilometres past Koudum turn off right towards Hemelum, after half a kilometre, left towards Bakhuizen and Rijs, then, after 1½ kilometres, right towards Bakhuizen and then, after two kilometres, left again via Mirns to Oudemirdum.

25 – Beyond Koudum the road passes between two of the lakes of south-west Friesland. These lakes largely originated from wind-driven wave erosion of the watercourses in this area of lowland peat. There was also local digging of the peat. Unlike the provinces of North and South Holland, the lakes here were not drained (less population pressure and less fertile lake bottom soils). They are now much used for water sports (see, for example, IDG Bulletin, 1978-79, pp. 26-28).

The area between the villages of Bakhuizen and Oudemirdum – known as Gaasterland – is strikingly different from the remainder of Friesland. It is rather accidented and has a considerable area of woodland. It is, in fact, an inlier of glacial sediments such as boulder clay, sand and gravel. From the route as described one has, immediately before Oudemirdum, a fine view to the right over the IJsselmeer (Lake IJssel).

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Drive through Oudemirdum in the direction of Joure and Heerenveen, past Sloten, the smallest of the eleven towns of Friesland, and past Sint Nicolaasga to the main road, where turn right for Lemmer and Emmeloord.

Between Sloten and Sint Nicolaasga the road crosses the Prinses Margriet Canal, an important inland waterways link between the Randstad and the north-east Netherlands via Lake IJssel. The motorway to Lemmer cuts off the western side of one of the largest of the Frisian lakes, the Tjeukemeer. Passing Lemmer the road leaves the province of Friesland to 'drop down' into the North East Polder at a level several metres lower. Following the motorway, past Emmeloord and Lelystad, one can reach the 'northern wing' of the Randstad (Amsterdam/Utrecht) again in about 1½ hours.

I.6. Addresses

Province of Drenthe, Information Department
Westerbrink 1
9405 BJ Assen

Province of Friesland, Information Department
Tweebaksmarkt 52
8911 KZ Leeuwarden

Province of Groningen, Information Department
Martinikerkhof 12
9712 JG Groningen

Economic and Technological Institute of the province of Drenthe
Stationsweg 20
9401 KX Assen

Economic and Technological Institute of the province of Friesland
Sophialaan 1
8911 AE Leeuwarden

Economic and Technological Institute of the province of Groningen
Turfsingel 65
9712 KL Groningen

Municipality of Ameland, Information Department
Postbus 22
9160 AA Hollum

Municipality of Groningen, Information Department
Grote Markt 1
9712 HN Groningen

Delfzijl Port Authority
Noordersingel 1
9934 AK Delfzijl

Netherlands Petroleum Company, Information Department
Schepersmaat 2
9405 TA Assen

Netherlands Gas Union
Laan Corpus den Hoorn 102
Groningen

Northern Development Company
Postbus 424
9700 AK Groningen

Association for the Conservation of the Wadden Sea
Voorstraat 18
8861 BK Harlingen

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II – STATISTICS

II.1. Introduction

The Statistics chapter in the last issue of the Bulletin was entirely devoted to bringing up to date a number of data from the IDG publication 'A Compact Geography of the Netherlands'. In this issue we return to the pattern that was followed in earlier Bulletins. We give a number of recent statistics about themes which, as school textbooks and the questions received by the IDG show, arise frequently in the geography education of other countries.

Included for the first time this year are figures about tourism and holiday traffic (Section II.7.) and some selective data about the three Benelux countries (Section II.8.). The latter are included because the Netherlands is often dealt with in the geography education of other countries within the context of the treatment of the Benelux economic union as a whole.

II.2. Population and area

The population of the Netherlands on 1st January 1983 was 14,339,551. The population density was 423 per square kilometre of land (on a total area of 33,939 km^2), 384 per square kilometre of the total incorporated area (37,304 km^2) and 345 per square kilometre of the total territory of the Netherlands (41,548 km^2).

The population increased by 53,722 persons in 1982. This increase was mainly the result of natural increase (Table 6).

Fig. 24 – The Netherlands Regions and Provinces.

Table 6 – Key demographic figures for 1982 (per mille).

birth rate	12,0	
death rate	8,2	
natural increase		3,8
emigration	4,9	
immigration	4,7	
net migration		– 0,2
administrative corrections		0,3
total population growth		3,8

Table 7 – Area, population and population density at 1st January 1983 and the population increase, 1978-1983, by province and region.

	land area* in km^2 1 Jan 83	population x 1,000 1 Jan 83	population per km^2 of land 1 Jan 83	% growth 1 Jan 78 to 1 Jan 83
Groningen	2334	560,7	240	2,4
Friesland	3352	595,2	178	3,9
Drenthe	2654	424,7	160	2,8
Northern Netherlands	**8340**	**1580,6**	**190**	**3,1**
Overijssel	3811	1038,4	272	3,7
Gelderland	5009	1727,5	345	3,6
S. Lake IJssel Polders **	949	101,3	107	106,3
Eastern Netherlands	**9769**	**2867,2**	**294**	**5,5**
Utrecht	1331	923,2	693	5,1
North Holland	2667	2308,0	865	0,4
South Holland	2907	3129,9	1076	2,5
Western Netherlands	**6906**	**6361,1**	**921**	**2,1**
Zeeland	1787	354,9	199	4,4
South West Netherlands	**1787**	**354,9**	**199**	**4,4**
North Brabant	4964	2094,0	422	4,1
Limburg	2172	1080,5	498	1,8
Southern Netherlands	**7135**	**3174,5**	**445**	**3,3**
NETHERLANDS* **	**33939**	**14339,6**	**423**	**3,2**

* area exc. waters wider than 6 metres.
** i.e. the municipalities of Dronten and Lelystad and the Public Authority of the Southern Lake IJssel Polders.
*** population of the Netherlands inc. persons without a fixed abode entered in the Central Population Register.

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At 1 January 1983 a number of 543,000 foreigners lived in the Netherlands, i.e. 3.8% of the total population. The Turks formed the largest group (152,000), followed by the Moroccans (100,000), Westgermans (43,000), British (39,000), Belgians (24,000), Spaniards (22.000) and Italians (21,000). At the same date some 11,000 Surinamese lived in the Netherlands, apart from the approximately 133,000 people with the Dutch nationality originating from Surinam.

Table 7 gives, by province and region (see fig. 24) the land area, population and population density at 1st January 1983, and the population increase since 1st January 1978.

II.3. Economically active population

A comparison of the division of the economically active population between the sectors of the economy for the years 1977 and 1982 shows that the agricultural sector showed a small decline, while employment in manufacturing decreased with almost 4%. Employment in the various service sectors increased by 4% (Table 8a). The percentage of unemployed has more than doubled over the five year period (Table 8b).

Fig. 25 gives a picture of the distribution of unemployment. Expressed in percentages, the situation gives rise most to concern in the provinces of Groningen and Limburg. The largest **numbers** of unemployed are to be found, however, in the provinces of South Holland and North Brabant.

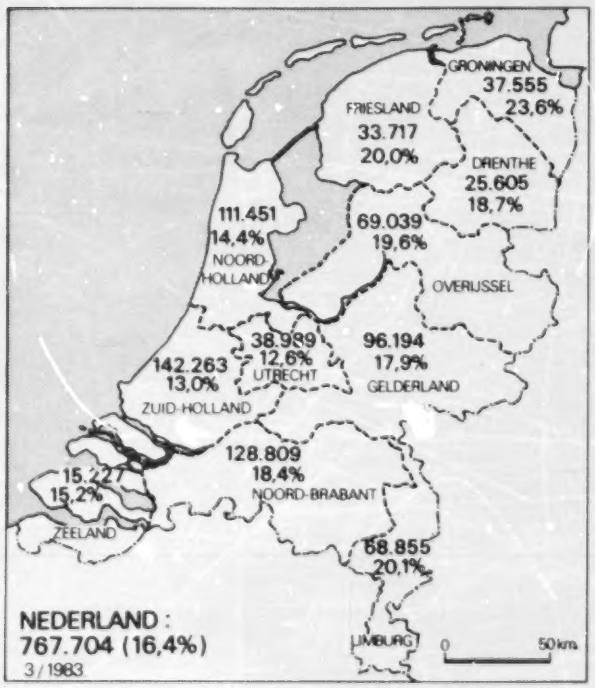

Fig. 25 – Unemployment by Province, March 1983, in absolute numbers and as a % of the economically active population.

Table 8a – Employment of the economically active population in 1977 and 1982, in % (by man years).

	1977	1982
agriculture and fisheries	6,2	5,9
manufacturing	32,6	29,0
trade, transport and other services	46,8	49,4
public authorities	14,4	15,8

Table 8b – Unemployed (in % of the economically active population) at 1st January.

	1977	1982
unemployed	4,5	10,8

II.4. Agriculture and horticulture

Of the total area of the Netherlands nearly half is cultivated land (as far as the total incorporated area is concerned – i.e. excluding Lake IJssel, the Wadden Sea and a strip of the North Sea – the proportion is 65%). Nearly 60% of the cultivated land is used as grassland (Table 9).

Table 9 – Cultivated land in 1982.

total area of cultivated land x 1,000 hectares	2 005	
of which in use for		
arable farming		35 %
horticulture		6 %
grassland		57%

The number of agricultural holdings has declined by more than half since 1960, from 301,000 to 140,000, while the average area has almost doubled, from 7.7 ha in 1960 to 14.4 ha in 1982.

In 1980, the agricultural sector was responsible for 4.8% of the total Dutch domestic product, 3.5% of the net national income and 23% of the total value of Dutch exports. Agricultural outputs are among the highest in the world (Table 10).

Table 10 – Agricultural outputs (national averages), 1982.

milk (kg per cow)	5300
eggs (no. per hen)	268
wheat (kg per ha)	7400
eating potatoes (tonnes per ha)	41,1
sugar beet (tonnes per ha)	59,5

II.5. Exploitation of minerals and manufacturing industry

The energy balance for 1982 (Table 11) shows, inter alia, that petroleum and natural gas are responsible for the lion's share of the Dutch energy supply. The petroleum is largely imported, while the Netherlands produces so much natural gas that more than half of it can be exported.

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Table 11 – Production, import and export and consumption of coal, petroleum, natural gas and nuclear energy, 1982, in 10^{15} joules *

	coal	crude petroleum	petroleum products	natural gas	nuclear energy + other	total
production	–	81	–	2280	93	2454
import	253	1590	1079	107	11	3041
export	38	2	1623	1240	1	2903
bunkers	–	–	278	–	–	278
withdrawn from stocks	– 60	21	47	0	– 0	8
gross consumption	156	1690	– 775	1147	103	2322

* 10^{15} joules are the equivalent of 23.4 million kg of petroleum or 31.6 million cubic metres of natural gas.

Table 12 gives a summary of the number of establishments and the numbers of persons employed per industrial order. A remarkable fact is that, in the Netherlands, a country that produces no iron ore whatsoever and has also mined no coal of its own since 1975, the metal industry is by far the largest branch of industry. More than half of the number of establishment in the metal industry given in Table 12 – nearly 1,800 – belong to the metal working sector. They include the machinery, electrical engineering and vehicle industries.

Table 12 – Number of establishments and number of employees per industry in 1980.

	No. of establishments	No. of employees x 1,000
Food, drink and tobacco	1539	146,4
Textiles, clothing and leather	817	57,8
Timber and furniture	916	33,9
Paper, paper products and printing	1209	89,8
Chemicals	630	110,9
Building materials, pottery, glass and cement	564	37,9
Metal industry	3335	377,4
Other industries	26	1,0
Total	9036	855,1

II.6. Foreign trade

In 1982 the total value of imports into the Netherlands amounted to 167,116 million guilders, which is about 11,680 guilders per head of the population. Exports amounted to 176,851 million guilders or 12,360 guilders per inhabitant. Table 13 gives a summary of the kinds of commodities imported and exported, while Table 14 shows how the foreign trade in 1982 was divided between the different countries and regions of the world.

Table 13 – Imports and exports by commodity groups, 1982, in %.

Imports		Exports		
Raw materials and semi-manufactures	62	Unprocessed agricultural products	7	
consumer goods	15	minerals	8	
capital goods	10	total manufactures	84	
other goods	12	of which:		
		food, drink and tobacco		17
		textiles, clothing		3
		petroleum products		16
		chemical products		18
		metal goods		24
		other manufactures		5

Table 14 – Imports and exports by countries/regions, 1982, in %

	Imports	Exports
Federal Republic of Germany	22	30
Belgium and Luxembourg	11	14
France	7	10
United Kingdom	9	9
Italy	3	6
Other EEC partners	2	4
total EEC	54	72
USA	9	3
other countries	37	25

II.7. Tourism and holidy traffic

Table 15 shows the number of bednights spent by foreign visitors in Dutch hotels and on camp sites (i.e. exc. guest houses, youth hostels etc.), broken down by the tourist regions shown in fig. 26.

Table 15 – Number of bednights spent by foreign visitos in hotels and on camp sites, by tourist region, apr-sept 1981, x 1,000.

Country / Region	Federal German Republic	Belgium and Luxemb.	Great Brit.	France	Switz-erland	Italy	Sweden	U.S.A.	other countries	Total
Wadden Sea/North Sea	2563,5	177,1	127,1	43,1	20,9	10,5	24,6	27,3	90,6	3084,7
Lake IJssel/other lakes	316,5	22,9	36,2	24,6	5,8	6,1	9,9	5,4	29,6	456,9
Delta Region	378,8	341,0	29,2	13,2	2,2	1,0	1,4	2,8	9,7	779,3
Sandlands of the Eastern Netherlands	466,7	27,8	58,4	25,4	9,0	7,0	29,7	20,5	73,2	717,6
Sandlands of the Southern Netherlands	411,9	48,5	69,2	35,3	5,0	6,3	17,0	16,5	53,7	663,4
South Limburg	19,0	7,0	53,3	4,9	1,4	2,0	1,1	8,4	14,7	111,8
Four major cities	359,5	65,6	430,5	21[illegible]	81,0	130,9	75,1	323,8	864,7	2549,4
Remainder of Netherlands	183,7	26,2	72,6	53,6	9,5	10,3	28,2	67,2	113,0	564,3
TOTAL	4699,6	716,1	876,5	418,5	134,8	174,1	187,0	471,9	1249,2	8927,4

Table 16 shows the destinations to which Dutch tourists travel for their holidays. During the summer there is a marked preference for France and the Federal Republic of Germany. Austria is the favourite desination for winter holidays.

Table 16 – Foreign holiday destinations of Dutch tourists, 1981-82, in %

Country	Winter, 1981-82	Summer, 1982
Belgium and Luxembourg	10	11
Federal Republic of Germany	17	15
France	9	21
Italy	2	7
Spain	12	13
Switzerland	11	6
Austria	26	12
Greece and Yugoslavia	13	5
Great Britain		3
Denmark, Norway, Sweden and Finland		3
Eastern Europe		1
other countries		3
Total (abs. in millions)	1,5	4,9

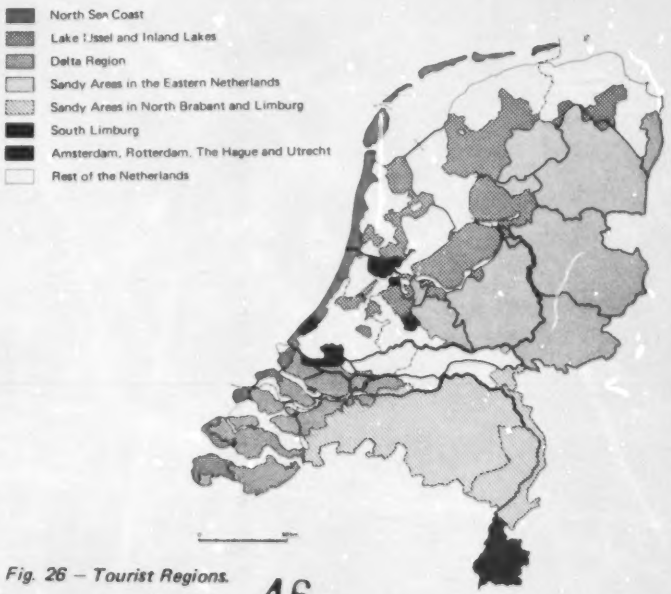
North Sea Coast
Lake IJssel and Inland Lakes
Delta Region
Sandy Areas in the Eastern Netherlands
Sandy Areas in North Brabant and Limburg
South Limburg
Amsterdam, Rotterdam, The Hague and Utrecht
Rest of the Netherlands

Fig. 26 – Tourist Regions.

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II.8. Benelux

The following data relating to the three countries of Belgium, the Netherlands and Luxembourg have been taken from the quarterly periodical 'Benelux'. The three countries decided to form a customs union in 1948 and it was expanded into an economic union in 1960.

Table 17 – Some data relating to the Benelux countries, 1981

	unit	Belgium	Netherlands	Luxembourg
area	1000 km^2	30,5	37,3	2,6
population, 31 Dec 81	1000	9855	14285	365
breakdown of econ. active pop.				
agriculture	%	2,9	5,7	5,6
manufacturing	%	32,3	33,3	37,3
services	%	64,8	61,0	57,1
unemployment	% of econ. active pop.	9,4	8,5	1,0
agricultural land	1000 ha.	1409	2011	128
of which:				
arable, horticulture	%	50,5	40,9	43,8
grassland	%	49,5	59,1	55,0
final consumption of energy				
coal and coke	%	14,8	3,6	44,1
petroleum products	%	45,4	34,2	39,4
natural gas	%	27,6	52,2	8,8
electricity	%	12,1	9,9	17,6
industrial production				
raw steel	1000 t.	12285	5472	3790
cement	1000 t.	6691	3316	342
private cars	1000	864	78	–
goods transport				
rail	mln.t.	69,6	20,4	15,2
road	mln.t.	336,7	397,2	19,1
waterway	mln.t.	97,0	225,1	7,7

Source: Benelux Economic Union (Secretariat-General: Regentschapsstraat 39, 1000 Brussels, Belgium).

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III – BRIEF NOTES

III.1. *Traffic*

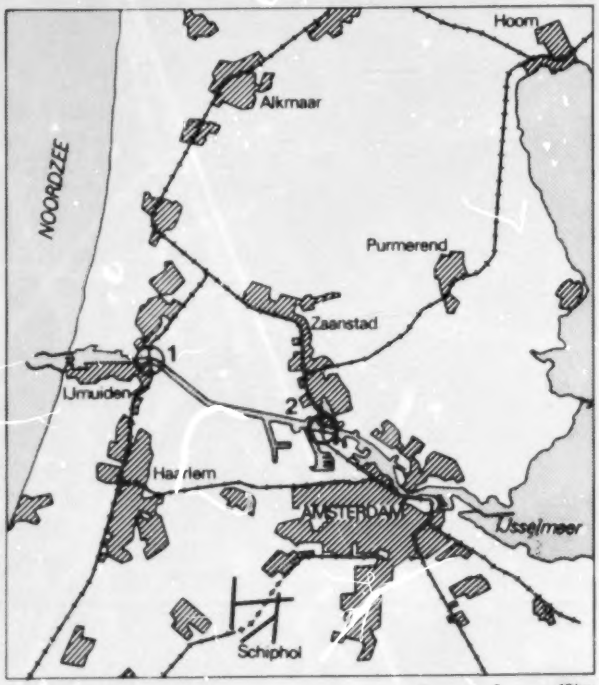
Second Railway Tunnel under the North Sea Canal

In May 1983 the Hem railway tunnel to the west of Amsterdam was opened to traffic. This is a three-track tunnel under the North Sea Canal and forms part of the rail link between Amsterdam and the part of the province of North Holland situated north of the North Sea Canal. The tunnel replaces a swing bridge dating from 1907, which formed an increasing obstacle to shipping and rail traffic. Commuter traffic by rail, in particular, between Amsterdam and such places as Zaanstad, Alkmaar, Purmerend and Hoorn, benefits greatly from the new tunnel.

The underground section of the tunnel is one and a half kilometres long and reaches a depth of 24 metres below sea level. The Hem tunnel is the second railway tunnel under the North Sea Canal; twelve kilometres to the west is the Velsen Tunnel on the Haarlem-Alkmaar line, dating from 1957 (fig. 27).

The fixed crossing over the Western Scheldt

The decision taken by the government in 1979 to build a permanent crossing between South Beveland and Zeeland Flanders (a 'bridge-tunnel') over and under the Western Scheldt, cf. IDG Bulletin, 1978-79, pp. 62-63) has been revoked. Mainly because of the difficult economic situation, it has been decided not to proceed with the construction for the present.



1 = Velsen Tunnel
2 = Hem Tunnel

Fig. 27 – Railway Tunnels under the North Sea Canal.

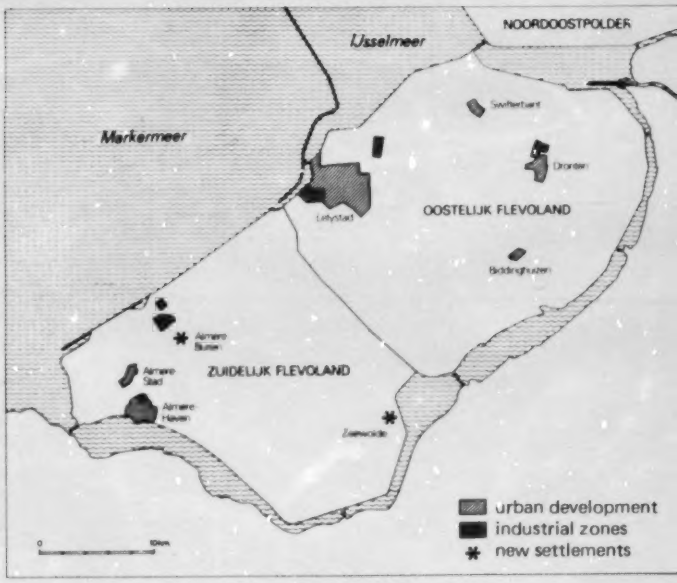


Fig. 28 – Settlements in Flevoland.

III.2. Civil Engineering works

III.2.1. The Delta Project

The Works in the Eastern Scheldt

August 1983 marked an important moment in the construction of the pier dam in the Eastern Scheldt. In 1976 the decision was taken to build a dam at the entrance to the Eastern Scheldt with 63 openings which can be closed by means of lifting gates (see, for example, IDG Bulletin, 1976-77, pp. 33-35, 1977-78, pp. 43-44, 1978-79, p. 65, 1979-80, pp. 45-46, 1980-81, p. 44, 1981-82, pp. 46-47). On 10 August 1983 the first pier, 35 metres in height and weighing 14,000 tones, was set in position in one of the three tidal channels with the aid of a specially constructed lifting ship. During the next few months the operation will be repeated at regular intervals for the remaining piers. All 66 piers have now been completed on the construction sites on the Neeltje Jans work island. As far as the construction of the partitioning dams in the eastern section of the Eastern Scheldt estuary is concerned (see, for example, IDG Bulletin, 1979-80, pp. 44-46), most progress has been made with the construction of the locks for push-tow barges and pleasure yachts in the Philips dam. In the light of the financial situation the government is considering spreading the execution of the whole Eastern Scheldt project over a longer time period. If these proposals are carried out, despite the opposition from many sides, it will not be possible to complete the Delta project by the target date of 1986. The costs of the whole Eastern Scheldt project (not to be confused with those of the whole Delta project) are now put at nearly 9,000 million guilders (in 1976 the decision to go ahead was based on an estimate of rather over 4,000 million guilders).

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III.2.2. Zuyder Zee Works

Town Planning in Soutern Flevoland

On 10 May 1983 a start was made officially on the building of **Almere-Buiten**, which forms after **Almere-Haven** and **Almere-Stad** the third residential nucleus of the polynuclear city of Almere in Southern Flevoland (fig. 28). According to the structure plan for **Almere-Buiten** this nucleus will ultimately accommodate 50,000 people. The planned population for Almere as a whole is put at a maximum of 250,000. On 1 January 1983 Almere-Haven had a population of 17,400 and Almere-Stad 9,300. Space has been reserved for the fourth and fifth nuclei of Almere, but no plans have yet been worked out.

Some two weeks after the construction of Almere-Buiten began, the Minister of Transport and Public Works drove the first pile for the second (and last) settlement in Southern Flevoland, **Zeewolde** (fig. 28). THis settlement will have a more agricultural character and will have a population of about 8,000 by 1990. Besides possessing a service function for the surrounding rural area of Southern Flevoland, Zeewolde will have a function as a recreation centre, notably for water sports on the peripheral lake, which is particularly broad at this point.

Markerwaard

A government decision may be expected in the autumn of 1983 about the plans for the reclamation of the fifth and last Lake IJssel polder – the Markerwaard. This decision will then have to be debated by Parliament. According to the most recent plans, the polder, if it materialises, will have an area of 41,000 hectares instead of the 60,000 hectares originally planned (see, for example, IDG Bulletin, 1980-1981, pp. 43-44).

III.3. Physical Planning

Physical plans of national significance have to pass through the 'PKB' (Key Planning Decision) procedure. The publications relating to this procedure consist of the following five parts:

A – The government's policy proposal
B – A summary of comments received in the public participation phase
C – Reports from the Advisory Council for Physical Planning and others
D – The government's decision
E – Text of the Key Planning Decision confirmed after parliamentary debate, (see for example, IDG Bulletin, 1979-80, pp. 18-19).

The table below indicates which parts of the various plans have appeared and gives the year of publication.

KEY PLANNING DECISIONS (situation at 1 June 1983)	**A** Policy Proposal	**B** Comments received	**C** Report from Advisory Council	**D** Government decision	**E** Text following Parl'y debate
Third Report on Physical Planning					
Orientation Report	1973	1975	1975	1975	1975
Urbanisation Report	1976	1977	1977	1977	1978
Rural Areas Report	1977	1978	1978	1979	–
Structure Schemes					
Domestic & Industrial Water Supplies I	1975	1975	1975	1975	1976
Electricity Supply	1975	1976	1976	1980	1981
Waterways	1977	1980	1980	1981	–
Traffic and Transport	1977	1978	1978	1979	1981
Public Housing	1977	1978	1978	1981	–
Civil Airfields	1979	1981	1981	1981	–
Land Use	1981	–	–	–	–
Defence Lands	1981	1982	1982	–	–
Domestic & Industrial Water Supplies II	1981	1982	1983	–	–
Open Air Recreation	1981	–	–	–	–
Waterways, partial revision	1981	–	–	–	–
Seaports	1981	–	–	–	–
Nature & Landscape Conservation	1981	–	–	–	–
Pipelines	1982	–	–	–	–
Other 'PKB's'					
Wadden Sea Report	1976	1977	1977	1978	1980
Sites for Nuclear Power Stations	1980	–	–	–	–
Markerwaard Report	1980	1982	1982	–	–

Photograph XX – *Test site with wind generators in the dunes near Petten in North Holland.*

III.4. Miscellaneous

III.4.1. Alternative Sources of Energy

Reference was made in the last Bulletin to the increasing vigour with which a search is being made for alternative sources of energy. In the field of wind power there has been a marked growth in the number of relatively small generators supplying a single enterprise – particularly in the glasshouse industry – with electricity. Besides this, much work is being done on the development of larger generators. A leading part is played in this by the Energy Research Centre for the Netherlands (Photograph XX).

In the intensive livestock industry more enterprises are going over to the extraction of "biogas" (methane) from manure. Here again it is a matter of smallscale applications, aimed in the first place at meeting energy needs of the home enterprise.

A form of energy production for which the Netherlands, with its lack of relief, appears to be little suited, is the generation of electricity with the aid of water power. Nevertheless, at the end of the 1950's, a small hydro-electric power station was built into the central pier of the most westerly of the three weirs in the River Lek, that near the village of Hagestein (see, for example, IDG Bulletin, 1980-1981, pp. 12-13). Because of technical problems this power station has not functioned during the past ten years. The current high energy prices make it economic to put the power station into operation again.
Restoration work began during the summer of 1983 and it is the intention that the plant should be supplying power again by the second half of 1984. Production will be about 4 million kWh per annum, equivalent to the consumption of 1200 families.

III.4.2. Flower Growing

'Its time they altered the school textbooks', ran the text of a newspaper report in the spring of 1983, in which reference was made to the great increase in the cultivation of cut flowers and potplants in the glasshouses of the Westland district.

This horticultural region, situated between The Hague and the New Waterway, is almost entirely covered by glasshouses (Photograph XXI; cf. for example, Pictorial Atlas, p. 21). The region has long been famous for the production of fruit and vegetables, notably tomatoes, cucumbers and lettuces. There has been a great change in this pattern during the past fifteen years, because a large number of growers have gone over to the cultivation of cut flowers and pot plants. The ratio of vegetable growers to flower growers in the Westland is now 40%/60%. Besides the three vegetable and fruit auctions in the Westland, there is now also a large central flower auction, operated as usual on a co-operative basis (the auction has a membership of 2,000 growers). A third of the total national turnover in flowers – more than 12,000 million guilders in 1982 – passes through this auction.

The largest flower auction remains that of Aalsmeer near Amsterdam. It is a cooperative with a membership of more than 4,000 growers and a 42% share in the Dutch flower market.

A considerable proportion of the flowers and plants is exported to other countries. Besides the traditional export to

Photograph XXI – *Horticulture under glass in the Westland district; on the left, the North Sea.*

neighbouring and other European countries, there has been a strong growth in the past few years in the export of flowers to the United States and Canada. The value of the export of cut flowers to these two countries increased from 3.5 million guilders in 1973 to nearly 40 million guilders in 1981. * The Netherlands is responsible for 59% of the total world trade in flowers and plants, followed in second and third place by Denmark and Colombia, each with 7% .*

* Source: 'Flowers ..... unlimited', published by the Auction at Aalsmeer; see list of references on p. 57.

III.5. Excursions, addresses.

The previous Bulletins included a list of addresses of museums, exhibitions, information agencies etc., intended for people preparing excursions to the Netherlands or wishing to obtain information direct from particular agencies. We are repeating this list in the current edition of the Bulletin, with a number of amendments.

PLACE AND INSTITUTION	OPENINGS TIMES	ADRESS AND TELEPHONE NUMBER
Aalsmeer, Flower auction	Mon-Fri, 7.30-11	Legmeerdijk 313, 1431 GB Aalsmeer, 02977 - 34567
Amsterdam		
Historical Museum (history of the city)	Tues-Sat, 10-17, Sun 13-17	Kalverstraat 92, 1012 PH Amsterdam, 020 - 255822
Aviodome National Aviation Museum	10-17 (Nov/Mar, closed Mon)	Schiphol, Amsterdam, 020 - 173640
Netherlands Maritime Museum	Mon-Sat 10-17, Sun 13-17	Kattenburgerplein 1, 1018 KK Amsterdam, 020 - 254175
Town Planning Department Urban Development Exhibition	Tues-Fri, 12.30-16.30 Thurs 18-21	Keizersgracht 440, 1016 GD Amsterdam, 020 - 222962
Arnhem		
National Folklore Museum "The Netherlands Open Air Museum"	May/Aug, 9-17.30, Sun 10-17.30 Apr/Sept/Oct 9-17, Sun 10-17	Hoeferlaan, 6816 SG Arnhem, 085 - 452065
Biddinghuizen (E. Flevoland)		
Flevohof – exhibition of Dutch agriculture, model farms etc.	8.30-18	Spijkweg 30, 8256 RJ Biddinghuizen, 03211 - 1514
Broek op Langedijk		
Museum Broeker Veiling (Auction Museum)	Apr/Sept, Sat-Sun 14-17	Voorburggracht 20, Postbus 1, 1720 AA Broek op Langedijk
Delta Region		
Delta Expo	Apr-15 Oct 10-17, 16 Oct/Mar, by appt. only	Haringvliet Locks, 3251 LD Stellendam, 01879 - 1600 (for appts. 16 Oct/Mar, National Tourist Office, Bezuidenhoutseweg 2, 2594 AV The Hague, 070 - 814191)
Eastern Scheldt Works (visit by bus to construction site of Eastern Scheldt dam, Information centre)	Apr/Oct: 10-17 Nov/Mar: Wed-Sun 10-17	Burgsluis, Schouwen-Duiveland (bus departs from here every half hour for the work island). Information Centre Work Island 'Neeltje Jans', 4328 ZG Burgh-Haamstede, 01115 - 2702
Enschede		
Twente – Gelderland Textile Museum	Tues-Sat, 10-12 and 14-17, Sun, 14-17	Espoortstraat 182, 7511 CM Enschede, 053 - 319093
Haarlemmermeer		
Cruquius Museum (in former steam pumping station; polders, draining etc.)	Apr/Sept: 10-17, Sat-Sun 12-17 Oct/Nov 10-16, Sat-Sun 12-16 Dec/Mar, by appt. only.	Cruquiusdijk 27, 2141 EW Vijfhuizen, 023 - 285704
Heerlen		
Geological Museum	Mon-Fri 9-12 and 14-16 Excursions by appt.	Voskuilenweg 131, 6416 AJ Heerlen, 045 - 711910
Kerkrade		
Mining Museum, Rolduc Abbey	May/Oct: Tues-Fri 9-17; Sat 13-17. July: Sat-Sun 13-17	Heyendahllaan 82, Kerkrade 045 - 457138
Kinderdijk, 16 windmills	Apr/Oct: Mon-Sat 9.30-17.30	near Alblasserdam, 01859 - 4118
Koog aan de Zaan, Mill Museum	Tues-Sun 14-17	Museumlaan 18, 1541 LP Koog aan de Zaan, 075 - 215029

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PLACE AND INSTITUTIONS	OPENING TIMES	ADDRESS AND TELEPHONE NUMBER
Lauwersoog, Expozee (drainage and reclamation of the Lauwers Sea; Wadden Sea)	May/Sept: Tues-Fri 10-17, Sat-Sun 14-17, Oct/Apr: by appt. only	Expozee, Strandweg 1, 9976 ZA Lauwersoog, 05193 - 9045
Lexmond Exhibition Government Service for Land and Water Use (land consolidation in the River District)	by appt. only	De Laak 31, 4128 CA Lexmond, 034-74 - 2044
Limmen (NH) Bulb growing Museum	Mon-Fri 10-12 and 14-16	Dusseldorperweg 64, 1906 AL Limmen, 02205 - 1950
Rotterdam Municipal Information Centre (films, slide sets etc.)	Mon 11-17, Tues-Fri 9-17 by appt. only	Coolsingel 42, 3011 AD Rotterdam, 010 - 172829
Municipal Water Supply: . Berenplaat Waterworks . Kralingen Waterworks	by appt.	Galvanistraat 15 (office), Rotterdam, 010 - 896811
Brabant Biesbos Water Authority: . Biesbos Reservoirs	by appt. only	Galvanistraat 15 (office), Rotterdam 010 - 772600
Municipal Port Department (films, slide sets etc.)	by appt. only	Europoint III, Galvanistraat 15, Rotterdam 010 - 894116
De Dubbelde Palmboom Historical Museum (urban history)	Tues-Sat 10-17 Sun 11-17	Voorhaven 12, 3024 RM Rotterdam, 010 - 761533
Schoonoord (Dr) De Zeven Marken Open Air Museum (Drenthe c. 1900)	Palm Sunday – Oct 9-18	Tramstraat 73, 7848 BJ Schoonoord, 05918-1577
Sliedrecht (ZH) Dredging Museum	Tues-Sat 14-17 (for groups, other times possible by appt.)	Molendijk 204/208, 3361 ER Sliedrecht, 01840 - 14166
Tilburg Netherlands Textile Museum	Ma-Fri 10-17, Sat-Sun 14-17	Gasthuisring 23, 5041 DP Tilburg, 013 - 422241
Utrecht Hoog Catharijne Information Centre (Urban renewal project; film etc.)	by appt. only	Hoog Catharijne, Utrecht, 030 - 333141
Netherlands Railway Museum	Tues-Sat 10-17, Sun 13-17	Johan van Oldenbarneveldtlaan 6, 3581 XZ Utrecht, 030 - 318514
Veendam Peat Colonies Museum	Sun-Fri 14-17	Kerkstraat 18, 9641 AR Veendam, 05987 - 16393
Vlaardingen Sea Fisheries Museum	Mon-Sat 10-17, Sun 14-17	Westhavenkade 53, 3131 AG Vlaardingen, 010 - 348722
Wageningen International Soil Museum (soils from all over the world)	Mon-Fri 8.30-17.15 by appt. only	Duivendaal 9, PO Box 353, 6700 AJ Wageningen, 08370 - 19063
Agricultural Research Dept. Visitors' Centre	Mon-Fri 9-17	Mansholtlaan 12, 6708 PA Wageningen, 08370 - 19119
Museum for historic agricultural equipment	Mon-Fri 9-12, 13.30-16	Droevendaalsesteeg 50, 6708 PB Wageningen, 08370 - 15774
Zaandam The Zaanse Schans (village of traditional Zaan timber buildings, with some windmills and various small museums)	July/Aug: 10-17 Sept/June: Tues-Sun 10-17	De Zaanse Schans, Kraaiennest 2, 1509 AZ Zaandam, 075 - 168218
Zuyder Zee Region		
"Nieuw Land" Information Centre (Zuyder Zee works general; films)	Apr/Oct: 10-17; Nov/Mar: Mon-Fri 10-17, Sun 13-17	Oostvaardersdijk, 8242 PA Lelystad, 03200 - 27799
Schokland Museum on the former island of Schokland (geology, history, archeology)	Mon-Sat 9-17, Sun 10-18 05275 - 1396	Schokkeringweg, Ens, North East Polder,
Museum of Maritime Archeology	Mon-Sat 9-17, Sun 10-18	Vossemeerdijk 21, 8251 PM Ketelhaven, East Flevoland, 03210 - 3287
Zuyder Zee Museum (history of Zuyder Zee and environs; partly laid out as an Open Air Museum)	Mon-Sat 10-17, Sun 12-17	Wierdijk 18, 1601 LA Enkhuizen, 02280 - 10122, (The Open Air Museum can be reached only by boat from the car park at the beginning of the dike to Lelystad).

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PLACE AND INSTITUTION	OPENINGS TIMES	ADRESS AND TELEPHONE NUMBER
NATURE RESERVES, NATIONAL PARKS, RECREATIONAL AREAS		
Visitors' Centres:		
Amsterdam		
Amsterdam Wood, "Bosmuseum"	Mon-Sat 9-16, Sun 10-17	Koenenkade, Amsterdamse Bos, Amsterdam, 020 - 431414
Municipality of Amsterdam Water Supply Undertaking: visitors' centre in dune water catchment area	9-17; groups by appt. (tel. 023 - 288050)	Vogelenzangseweg, Vogelenzang, 023 - 246781
Castricum		
De Hoep Visitor's Centre (dunes)	May/Aug: 10-12, 14-17; Sept/Apr: Sun 13-16	Zeeweg, Castricum, 02518 - 52243
The Hoge Veluwe National Park, "De Aanschouw"	Apr/Oct 10-17	Houtkampweg, Otterlo, 08382 - 627
Overveen		
The Kennemer Dunes Visitors' Centre	15 Apr/15 Sept 9-16.30, 16 Sept/14 Apr: Sat-Sun 9-16.30	Militairenweg 4, 2051 EV Overveen, 023 - 271871
Spaarnwoude		
Crayenstein Visitors' Centre (recreational area)	Apr/Oct: Sat 13-17, Sun 11-17 (at other times by appt.)	Machineweg 1, Halfweg, 02907 - 2644
Texel, Natural Recreation Centre (Texel and Wadden Sea)	Mon-Sat 9-17	Ruyslaan 92, 1796 AZ De Koog, 02228 - 741
Ossenzijl (Ov)		
"De Weerribben" (area of lakes and low peat in N.W. Overijssel)	Sta-tues 13.30-16.30 Wed-Fri 10-16.30	Hoogeweg 27, 8376 EM Ossenzijl, 05617 - 272
Nederweert (L)		
"Mijl op Zeven" (De Peel peat bog, S.E. North Brabant)	Apr/15 Sept: 9-18, Sat-Sun 10-18	Moostdijk 8, 6035 RB Nederweert, 04951 - 41497
BOAT TRIPS/TOWNS		
Amsterdam – through canals and harbour	throughout the year	Rederij P. Kooy, Oude Turfmarkt 0,125, 1012 GC Amsterdam, 020 - 233810, and others
Rotterdam – through the port	throughout the year	Spido b.v., Willemsplein 20, 3016 DR Rotterdam, 010 - 135400
OTHER BOAT TRIPS		
(limited selection, further information from: National Tourist Bureau, Bezuidenhoutseweg 2, 2594 AV The Hague, 070 - 814191)		
Delta Region		
Haringvliet, from Rotterdam	July/Aug	Spido, Willemsplein 20, 3016 DR Rotterdam, 010 - 135400
from Willemstad	Apr/Sept	Otter, Pr. Christinastraat 61, 4797 HP Willemstad, 01687 - 2814
Eastern Scheldt	Mid May/Sept	T. den Breeken, Zandkreekstraat 17, 4301 WJ Zierikzee, 01110 - 4995
Frisian Lakes		
from Leeuwarden		Stad Dokkum, Tijnjekade 31, 8936 AB Leeuwarden, 05100 - 39290
from Sneek		Harder en van der Werf, 1e Oosterkade 6, 8605 AA Sneek, 05150 - 17314
Loosdrecht Lakes		
from Utrecht	Mar/Oct	Rondvaartbedrijf Utrecht, Oudegracht t/o 85, 030 - 319377
from Loosdrecht	Mar/Oct	Wolfrat, Oud Loosdrechtsedijk 165, 1231 LV Loosdrecht, 02158 - 3309
Lake IJssel		
Urk-Enkhuizen	May/mid-Sep (not on Sun)	Friese Recreatie Onderneming b.v., Jol 36, 8446 EZ Heerenveen, 05130 - 27030
Enkhuizen-Stavoren	mid-May/mid-Sept	Rederij NACO b.v., Stationsweg, Alkmaar, 072 - 118646

ADDRESSES OF ORGANISATIONS NOT MENTIONED ABOVE

Amsterdam, Municipal Information Dept.	O.Z. Voorburgwal 197, 1012 EX Amsterdam	020-5529111
Amsterdam, Municipal Port Department	Havengebouw, De Ruyterkade 7, 1013 AA Amsterdam	020-221201
Central Bureau of Statistics CBS	Prinses Beatrixlaan 428, 2273 XZ Voorburg	070-694341
National Tourist Office	Bezuidenhoutseweg 2, 2594 AV The Hague	070-814191
Department of Waterways, Delta Division, Information Department	van Veenlaan 1, 4301 NN Zierikzee	01110-8000
Government Service for Land and Water Use	Griffioenlaan 2, 3526 LA Utrecht	030-859111
The Hague, Municipal Information Centre	Groenmarkt 7, 2513 AL The Hague	070-624121
Information and Documentation Centre for the Geography of the Netherlands	Heidelberglaan 2, P.O. Box, 3508 TC Utrecht	030-531378
Ministry of Agriculture and Fisheries, Information Department	Bezuidenhoutseweg 73, 2594 AC The Hague	070-793911
Ministry of Economic Affairs, Information Department	Bezuidenhoutseweg 151, 2594 AG The Hague	070-814111
Ministry of Housing, Physical Planning and the Environment Information Department	van Alkemadelaan 85, 2597 AC The Hague	070-264201
Ministry of Transport, Waterways and Communications Information Department	Plesmanweg 4, 2597 JG The Hage	070-747474
Ministry of Welfare, Health and Cultural Affairs Information Department	Steenvoordelaan 370, 2284 EH Rijswijk	070-949233
National Association for the Conservation of the Wadden Sea	Voorstraat 18, 8861 BK Harlingen	05178-5541
National Geological Service	Spaarne 17, 22011 CD Haarlem	023-319362
National Historic Buildings Conservation Service	Broederplein 41, 3703 CD Zeist	03404-28122
National Physical Planning Agency	Willem Witsenplein 6, 2596 BK The Hague	070-264201
Department of Waterways, Information Department	Koningskade 4, 2596 AA The Hague	070-264011
National Water Supply Institute	Nieuwe Havenstraat 6, Voorburg	070-694251
Netherlands Railways, Educational Information Department	Moreelsepark 1, 3511 EP Utrecht	030-353630
Recreation Foundation	Statenplein 1, 2582 EW The Hague	070-500100
Rotterdam, Municipal Information Department	Coolsingel 40, 3011 AD Rotterdam	010-179111
Royal Netherlands Geographical Society, KNAG	Weteringschans 12, 1017 SG Amsterdam	020-277716
Royal Netherlands Tourist Association, ANWB	Wassenaarseweg 220, 2596 EC The Hague	070-264426
Rijnmond Authority, Information Department	Vasteland 96-104, P.O. Box 23073, 3001 KB Rotterdam	010-111320
Soil Mapping Foundations STIBOKA	Staringgebouw, Marijkeweg 11, 6709 PE Wageningen	08370-19100
South IJsselmeer Polders Board	Zuiderwagenplein 1, 8224 AC Lelystad	03200-26844
Idem	Raadhuis, Kerkstraat 98, 1354 AA Almere	03240-10194
State Printing and Publishing House	Chr. Plantijnstraat, 2515 TZ The Hague	070-789911
Topographical Service	Westvest 9, 2611 AX Delft	015-120846
Utrecht, Municipal Information Department	Slachtstraat 12, 3512 BC Utrecht	030-328511
IJsselmeer Polders Authority, Information Department	Zuiderwagenplein 2, 8224 AD Lelystad	03200-99111

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IV – ABOUT THE IDG

Annual Report for 1982 and activities during the first half of 1983

During the calendar year 1982 the IDG received 1,175 requests for information and/or documentation, which was a higher number than in any previous year. The requests came from 65 countries and brought the total number of countries from which the IDG has received requests since it was established in 1964 to 102.

As part of the series of publications which the IDG issues in collaboration with the Ministry of Foreign Affairs, the completely revised Wall Map of the Netherlands on a scale of 1:325,000 has appeared in the following language editions: Dutch, French, Danish and Italian. The remaining language editions will appear in the near future (English, German, Polish, Spanish, Portuguese, Indonesian, Japanese and Arabic). The 'Compact Geography of the Netherlands' and the 'Pictorial Atlas of the Netherlands' are also issued in these languages.

The following are some of the features which have been brought up to date on the new map: major built-up areas, road network and civil engineering projects. The depiction of the major-built areas and traffic infrastructure in the bordering parts of Belgium and the Federal German Republic has also been updated. Unfortunately, attention has to be drawn to two errors: the Schiphol Railways (Leiden-Schiphol-Amsterdam) is missing from the Dutch language edition and the Eastern Scheldt has been erroneously depicted on all editions with the colour for a (future) fresh water area. In fact, the Eastern Scheldt will remain **salt** as a result of the decision to build a pier dam at its mouth with 63 sealable openings.

Notwithstanding what was stated in Section II.1. of the previous Bulletin, it unexpectedly proved possible to issue a partly revised edition of the 'Compact Geography of the Netherlands' in certain languages. Its fourth edition has so far appeared in English. The maps remain exactly the same as in the previous edition, but the figures in the text have been brought up to date.

The majority of the IDG publications have now been issued on microfiche by the **ERIC Clearing House for Social Studies Education** (855 Broadway, Boulder, Colorado 80302, USA). A list is obtainable from ERIC of the libraries both inside and outside the United States where this material can be consulted.

Various activities took place during 1982 at the international level in the field of school textbook revision. In Utrecht, in September, the first Dutch-Italian discussions were held about the mutual correction of geography teaching aids. The IDG published a Final Report of these discussions, partly in Dutch and partly in German. Also in September, the first discussions were held at Bloomington, Indiana within the framework of a Dutch-American project for the correction of geography and history teaching aids. The project, which was set up in the context of the celebration of the bicentenary of diplomatic relations between the two countries, was completed during the course of 1983. A Final Report, published entirely in English, will appear at the end of 1983 or early 1984.

Lastly, in October 1982, the **Georg Eckert Institut für Internationale Schulbuchforschung** in Brunswick organised the third Dutch–West German conference on the revision of geography teaching aids. It was encouraging to note that, at this conference, both sides were able to report a distinct improvement in the content of school textbooks and atlasses as far as the geography of the partner country is concerned. The IDG also hopes to publish a Final Report on this conference, largely or wholly in German, in 1983.

During the final month of 1982 and the first three months of 1983 a project was carried out by the IDG in collaboration with its sister institute in Antwerp (Geographical Information and Documentation Centre for Flanders – GID), to make an inventory of differences between the Netherlands and Flanders in the use of geographical terms. The project was carried out under the auspices of the **Nederlandse Taalunie** (Dutch Language Union), an organisation set up by the Dutch and Belgian governments to encourage uniformity in the use of the Dutch language in both countries. The Final Report of this project was published during the **Flemish-Dutch Geograhy Symposium** held in Antwerp in April 1983.

Aims and activities.

For those readers who are making the acquaintange of the IDG for the first time through the medium of this Bulletin there follows finally, a summary of the IDG's origins, aims and activities.

The Information and Documentation Centre for the Geography of the Netherlands is a non-profit making body, whose aim is to supply information and documentation about the geography of the Netherlands to institutions and bodies outside the Netherlands concerned with education, study and information, in the widest sense, about that country.

The idea of establishing such centres derived from a conference about the correction of geography school textbooks, held in Ireland in 1963 under the auspices of the Council of Europe. The Centre has been functioning since 21st September 1964. Under the pressure of circumstances (a parliamentary question about incorrect statements about the Netherlands in a foreign geography textbook) activities had to begin before a definitive form of organisation had been worked out. On 9th December 1969 the Centre became a foundation and, on 1st April 1971, the Bureau of the Centre, established in the Geography Department of the University of Utrecht, was able to begin operating. The necessary funds for the functioning of the Bureau derive from an annual subsidy of the Ministry of Education and Science; publications, exhibitions, conferences etc. are largely financed by the Ministry of Foreign Affairs.

The work done so far can be divided into a number of categories:

- replying to letters from all parts of the World. The letters contain a great variety of requests for information about the geography of the Netherlands, as well as for the supply of visual material, for addresses or assistance in the preparation of field excursions.

- the reception of foreign geographers preparing, for example, a publication about the geography of the Netherlands or a field excursion. The Bureau offers, inter alia, the possibility of consulting a bibliography of foreign language publications about the geography of the Netherlands and a modest collection of photographs.

- the compilation of information in different languages (brochures, guides, wall map, bulletin: see page 56), in collaboration with the Ministry of Foreign Affairs.

- the compilation of a bibliography of foreign language publications, principally published since 1945, about the geography of the Netherlands. Lists have been compiled for distribution of the titles in the English, French and German languages contained in the bibliography.
  In addition, a card index has been made of all the visual material (maps, photographs, films etc.) illustrating the geography of the Netherlands.

- the organisation of bilateral conferences on the mutual revision of geography teaching material.

- attempting to publicise the Centre's existence and mode of operation among as wide as possible a circle of foreign geographers.

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Appendix 1

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Recent publications on the geography of the Netherlands.

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Berggren, H. –
The construction of the storm surge barrier in the Eastern Scheldt
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Bleekrode, R.K. –
A new Vessel Traffic Management System for the Port of Rotterdam
in: Land + Water International, 49/1983, p. 3-14

Carrick, R.J. and J.E. Wrathall
Urban renewal in the Netherlands
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Central Bureau of Statistics
– Bevolking der gemeenten van Nederland op 1 januari 1983; 88 pp., Price: Hfl. 10,50
(Population of the municipalities of the Netherlands, 1st January 1983) *
– Regional Statistisch Zakboek 1981; 240 pp., Price: Hfl. 25,–
(Regional Statistical Review, 1981)
– Statistical Yearbook of the Netherlands 1982; 370 pp., Price: Hfl. 62,50
– Statistisch Zakboek 1983; 378 pp., Price: Hfl. 19,50 *
(Pocket Yearbook 1983) *
– 80 Jaar Statistiek van Nederland; 308 pp., Price: Hfl. 30,–
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The Hague, Staatsuitgeverij.

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in: 'Oil or industry? Energy, industrialisation and economic policy in Canada, Mexico, the Netherlands, Norway and the UK'.
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Verenigde Bloemenveilingen (Flower Auction), Aalsmeer; 1982

Gay, F.J. –
Benelux
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Martinus Nijhoff, The Hague, 1980, 311 pp.

Holten, Th. van
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Huisman, H. –
Nuclear facilities in Dutch border areas
in: Planning and Development in the NL; vol. XIV – nr. 2, 1982 p. 205-230

Kaa, D.J. van de –
Population prospects and population policy in the Netherlands
in: The Netherlands Journal of Sociology (Amsterdam), Vol. 17, no. 1, April 1981, p. 73-91

Knaap, G.A. van der –
Population growth and urban systems development; a case study
Martinus Nijhoff, The Hague, 1980, 237 pp.

Van Lier, H.N. and F.R. Steiner
A review of the Zuiderzee reclamation works: an exemple of Dutch physical planning
in: Landscape Planning (Amsterdam), vol. 9, no. 1, June 1982, p. 35-59

Mik, G. –
Residential segregation in Rotterdam: Background and policy
in: T.E.S.G., Amsterdam, vol. 74 (1893), nr. 2, p. 74-84

Ministry of Agriculture and Fisheries
– Aspects of Dutch agriculture; 56 pp.
– Dutch agriculture in facts and figures; 15 pp.
The Hague, 1982
– Wind energy in the Netherlands
in: AgriHolland 5 – 1982, 5 pp.
– Fisheries
Agri-Holland 4 – 1981, with contributions on:
– The construction of fishing vessels in Holland, 12 pp.
– General information on Dutch coordinating organization, 1 p.

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Ministry of Foreign Affairs
The Kingdom of the Netherlands; facts and figures
This publication comprises a.o. the following parts:
- Country and people (geography, population)
- The Economy
- Agriculture and Fisheries
- Transport and Communications
- Health and Environmental Protection
- Housing and Physical Planning
- Public Works

The Hague, 1978/1979

Ministry of Housing and Physical Planning, The Hague
- Summary of the Report on urbanisation in the Netherlands, *) 1976, 14 pp.
- Summary of the Rural Areas Report, *) 1978, 36 pp.

Ministry of Transport and Public Works, The Hague
- The Delta project; 1982, 15 pp.
- Room at last; the IJsselmeerpolders described and illustrated; 1976, 48 pp.
- The art of a nation (Picture book Delta Project)

OECD Economic Surveys; NETHERLANDS
Paris, OECD, March 1981, 60 pp.

Planning and Development in the Netherlands
Vol. XIII, Nr. 1, 1981, Van Gorcum, Assen
Special issue on Immigrant Ethnic Minorities in the Netherlands with articles on:
- The contours of a general minorities policy
- Dispersion and dispersal policy
- The 'second generation' of immigrants in education and on the labor market
- Research on ethnic minorities and its contribution to policy development
- Immigrant minorities in the Netherlands: ethnicity as a factor for social policy and practical consideration
- Views of the ethnic opinion leaders on government policy

Planning and Development in the Netherlands
Vol. XIII, Nr. 2, 1981, Van Gorcum, Assen with articles on:
- The Dutch economy in 1985
- Energy policy in the Netherlands
- Industrial development and sectoral policy in the Netherlands economy
- Relations between central and local governments in the Netherlands

Planning and Development in the Netherlands
Vol. XIV, Nr. 1, 1982, Van Gorcum, Assen
Special issue 'The Planning Debate', with articles on:
- The planning debate in the Netherlands
- Dutch governmental planning and the moods of particular times
- Beyond the Archimedean position: Planning in the perspective of action
- Planning between law and legislation
- The lost dimension of action; the case of physical planning

Polman, G.K.R. –
The Oostvaardersplassen, a waterfowl reserve in the lately reclaimed Flevoland Polder
in: Land & Water International, 44/1981, p. 19-24

Rotterdam Port Authority –
- Review Map (1:80.000) of the Rotterdam/Europoort port area
- Rotterdam/Europoort – Yearbook – Information 1982
  Uitg. De Havenkoerier N.V., Rotterdam

Rijksdienst voor de IJsselmeerpolders, Lelystad **)
Flevoland, Facts and Figures (annually), 36 pp.

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Ecological impact of the Delta Project in the Netherlands
in: Land & Water International (NEDECO, P.O.B. 80508, 2508 GM The Hague)
- (1979) no. 40, p. 20-34, part 1
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Regional Locational Cycles and the Stages of Locating Foreign Manufacturing Plants – The Case of the Netherlands
in: T.E.S.G., Amsterdam, vol. 74 (1983) nr. 1, p. 2-11

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(Statistical Handbook for the North of the Country, 1982),
A.J. Osinga, Bolsward (published annually); ISBN 90 6066 423 X

The storm surge barrier in the Eastern Scheldt
in: Land & Water International, The Hague, 43 (1980), pp. 25-30

Tamsma, R. –
Three decades of regional policy in the Netherlands 1950-1980
Geography Department of the State University Groningen, 1980, 98 pp.

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*) for the other reports and structure schemes in the field of physical planning, see Section III.3. of this Bulletin.
**) a complete list of publications issued by the IJsselmeer Polders Development Authority is obtainable from the Authority's Information Department (see list of addresses on p. 54).

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Thijsse, J.P. –
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De Vries, J.J.
Fresh and salt groundwater in the Dutch coastal areas in relation to geomorphological evolution
in: Geologie en Mijnbouw, vol. 60 nr. 3, Sept. 1981, p. 363-368

Publications IDG/Ministry of Foreign Affairs, Utrecht/The Hague

- Compact Geography of the Netherlands; 3rd. ed., 1979, 44 pp.
- Pictorial Atlas of the Netherlands; 1977, 40 pp.
- Wall Map of the Netherlands, scale 1:325,000 (revised edition appears in 1983)

These publications are obtainable in the following language versions:
Dutch – German – English – French – Danish – Spanish – Portuguese – Italian – Polish – Russian – Indonesian – Japanese – Arabic.

- IDG-Bulletin (annually)
  Language versions: Dutch – German – English –French – Spanish
- Randstad Holland; 1980, 72 pp.
- The South-West Netherlands; 2nd ed., 1977, 60 pp
- Zuyderzee/Lake IJssel; 3rd ed., 1981, 72 pp
  Language versions of these publications (at the same time excursion guides):
  Dutch – German – English – French
- Agriculture in the Netherlands: leading article in Bulletin 1977-78 (pp. 5-29)
- Industry in the Netherlands: leading article in Bulletin 1976-77 (pp. 5-22)
- Netherlands & Water: leading article in Bulletin 1978-79 (pp. 5-56)
- Physical planning in the Netherlands: leading article in Bulletin 1979-80 (pp. 5-34)
- The region of the great rivers: leading article in Bulletin 1980-81 (pp. 7-33)
- South Limburg: leading article in Bulletin 1981/82 (pp. 6-38)

The geography of the Netherlands in pictures
Series of 36 colour transparencies with explanatory text; 1981
Obtainable from IDG, Utrecht; price Hfl. 45,–.

Periodicals

- T.E.S.G. (Tijdschrift voor Economische en Sociale Geografie; Journal of Economic and Social Geography)
  6x per year; partly in English
  Subscription rate: Hfl. 91,–
  Royal Dutch Geographical Society (KNAG), Weteringschans 12, 1017 SG Amsterdam

- Rotterdam Europoort-Delta
  4x per year; in English
  Havenbedrijf der Gemeente Rotterdam, address: Europoint III, P.O. Box 6622, 3002 AP Rotterdam

Atlases

- Meulenhof-Educatief b.v., P.O. Box 100, 1000 AC Amsterdam
  Schooiatlas for secondary education
  Amsterdam, 1982, price: Hfl. 52,–. ISBN 90 280 0794 6

- Wolters-Noordhoff b.v., P.O. Box 58, 9700 MB Groningen
  De Grote Bosatlas; 49th rev. ed., 195 pp.
  Groningen, 1981, price: Hfl. 66,25. ISBN 90 01 12100 4

Topographical Maps

Topografische Dienst, Westvest 9, 2611 AX Delft
- Scale: 1:10.000
  only in black-and-white; price: Hfl. 13,50
- Scale 1:25.000 and 1:50.000
  in black-and-white, price Hfl. 5,20
  in multi-colour print, price: Hfl. 9,10
  See page 63

A catalogue containing examples of the various maps may be obtained from the Topographical Service (price: Hfl. 3,50).

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Transparencies

FIBO-Beeldonderwijs, Zeist: Series of colour-transparencies (textbooks in Dutch)
537 – De Zuiderzeewerken (20)
691-2-3 – Deltawerken (63)
384-5 – Waddenzee en Waddenland (Wadden Sea Area, 48)
386-7 – De Randstad Holland (40)
225 – Rotterdam (25)
219 – Amsterdam (20)
694 – Het Polderland (20)
696 – Langs de grote rivieren (the big rivers; 20)
697 – De kustduinen (the dunes; 20)
699 – Zuid-Limburg (20)
649-50 – De kust (the coast; 60)
651-2 – Laag-Nederland (Low-Netherlands; 60)
653 – Hoog Nederland (The 'High' Netherlands; 30)
647-8 – Onze waterwegen (waterways; 60)
638 – Ons drinkwater (our drinking water; 15)
662 – Tuinbouw (Horticulture; 20)
663 – Veeteelt (Livestock farming; 20)
664 – Recreatie en Toerisme (Recreation and Tourism; 20)
The prices vary between Hfl. 20.- and Hfl. 60,–, according to the number of transparencies.
For copyright and orders: FIBO-beeldonderwijs, Utrechtseweg 66-68, Zeist.

IDG, Utrecht
The geography of the Netherlands in pictures. Series of 36 colour transparencies with explanatory text; 1981.
Obtainable from IDG, Utrecht; price Hfl. 45,– (see p. 20)

Meulenhoff-Educatief Amsterdam
– Series of colour-transparencies (aerial photographs) accompanying the textbook "De Geo Geordend III" (in preparation)
– Series of transparencies about the Dutch Wadden Zone (32 transparencies), ISBN 90 280 5282 8, Hfl. 77,50.
– Slide commentary, ISBN 90 280 5312 3, Hfl. 12,50.

Polyvisie, colour slide series:
C 7400 – What is happening to the Wadden Sea? (72 slides)
K 9157 – The Water supply of the Netherlands (44)
K 3020 – Threatened landscapes (Tape slide presentation, 96 slides with tape cassette)
K 3015 – The energy supply of the Netherlands (36)
K 9101 – Sea becomes land (26)
K 9159 – Southern Flevoland (12)
K 9162 – The enclosing dam (12)
K 9163 – Dike construction (12)
K 9164 – Reclamation (12)
K 9152 – The Dutch Coast (31)
K 9158 – Our modern ports (24)
K 9161 – Europoort (12)
K 9168 – De Nederlander en het water (The Dutchman and Water; 12)
K 9169 – Economische aspecten van Nederland (Economic Aspects of the Netherlands; 24)
K 9170 – Rotterdam, gateway to Europe (12)
K 3018 – The Blast furnaces (12)
K 3019 – Netherlands Railways (12)
Prices vary from Hfl. 11,50 to Hfl. 130,00, depending upon the number of slides.
For copyright and orders: Polivisie, 's-Gravelandseweg 78a, Hilversum.

Wall Maps

Van Goor Zonen, P.O. Box 70707, 1007 KS Amsterdam
– Staatkundige kaart van Nederland (The Netherlands; provinces, with blank work map on the reverse side);
ISBN 90 10 030350, 1 : 275,000. Price: Hfl. 184,25

IDG/Ministry of Foreign Affairs
– Wall Map of the Netherlands, 1 : 325,000 (types of landscape; 3rd revised edition, 1983)

Wolters-Noordhoff, P.O. Box 58, 9700 MB Groningen
– The Netherlands, General, 1 : 275,000, ISBN 9001 96176 2; Hfl. 166,50
– The Netherlands in European Space, 1 : 750,000, ISBN 9001 96081 2; Hfl. 166,50
– The Netherlands – relief, 1 : 300,000, ISBN 9001 96083 9; Hfl. 166,50
– The Netherlands – land use, 1 : 300,000, ISBN 9001 96082 0; Hfl. 166,50
– The Randstad Holland, 1 : 115,000, ISBN 9001 96084 7; Hfl. 166,50

Malmberg, P.O. Box 233, 5201 AE 's-Hertogenbosch
– Satellite photomap of the Netherlands, 1 : 275,000, with explanatory booklet (in Dutch); Hfl. 40,–

Meulenhoff-Educatief, P.O. Box 100, 1000 AC Amsterdam
– Wall map of the Netherlands scale 1 : 250,000, 120x157 cm, with relief map which can be written on printed on the reverse, ISBN 90 280 5018 3, Hfl. 245,–

IJsselmeer Polders Development Authority, Lelystad
– Flevoland, Land Use; 1 : 50,000, Hfl. 10,–.

CARTO, Gaucheretstraat 139, 1000 Brussels, Belgium
– Wandkaart van Nederland (Wall Map of the Netherlands; obtainable in a Dutch and a French version), scale 1 : 250,000.

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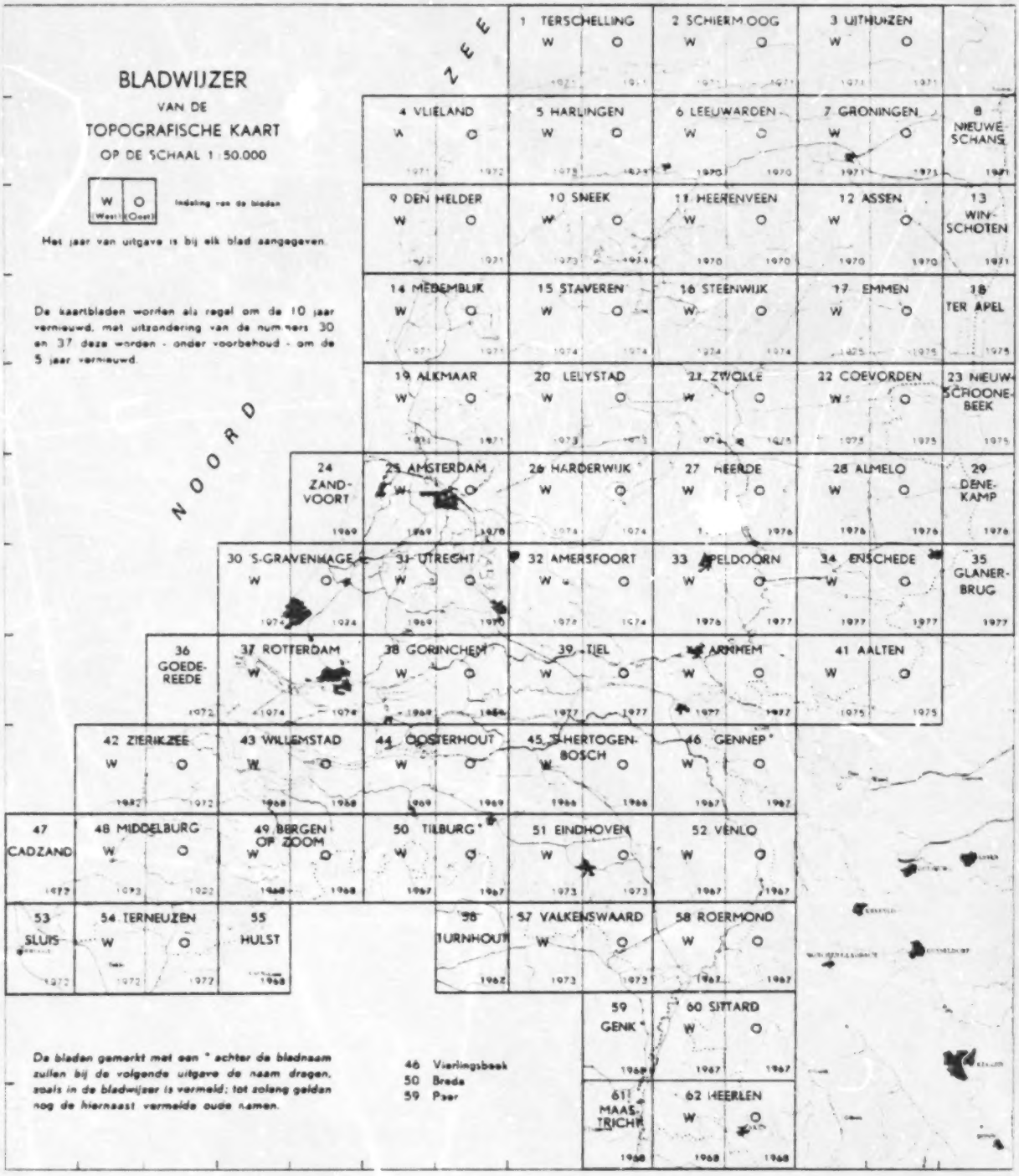

Each of the lettered sections is a sheet in the 1 : 50,000 map series; each of these sections covers four sheets of the 1 : 25,000 series. Between 1979 and 1982 new editions appeared of a number of sheets, among others covering South Limburg and parts of the Randstad Holland.

For information about Water Control maps, Geological maps, Soil maps and Geomorphological maps (prices, addresses where to order) apply to the IDG.

Fig. 29 – Sheet index to topographic maps.

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